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REAR-ADMIRAL T. A. B. SPRATT, C.B., F.R.S., in the Chair.

ANCIENT NAVAL TACTICS.

PART I.

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I CANNOT help feeling that at the very outset of this lecture an apology is due on my part for venturing to address an audience in the theatre of this Institution upon the very difficult, though interesting, subject of ancient naval tactics. For, in order that such a theme may be properly handled, three things are requisite: 1st, classical knowledge; 2ndly, a practical acquaintance with seamanship and naval construction; 3rdly, leisure; and of these three the two latter have fallen to my lot in but very scanty proportions. Hence the sketch that I am about to offer you will present many imperfections and omissions both to scholars and to nautical men; but the time that has been spent upon it will not have been wholly unfruitful, if by it, perchance, some member of the illustrious naval profession, who may happen to have both learning and leisure at his command, shall be induced to study this question, and throw light upon its many obscurities.

The subject before us is that of "Ancient Naval Tactics;" but, having regard to its vastness and complexity, it will be as well at once to introduce some limitations, so that we may not attempt an impossible task in sixty minutes. By ancient, therefore, we will understand Greek and Roman—dismissing altogether those interesting questions concerning the Assyrian, Phœnician, Egyptian, and Carthaginian navies, which might well form the subject of a separate discourse. Of the Greeks and Romans we shall find ourselves compelled to give most attention to the former, not only as presenting us with the best information, but as being in virtue of their seafaring habits, their constructive skill, and their tactical intelligence, *facile principes* in the naval art.

With these limitations, the consideration of ancient naval tactics will, in the first place, involve an inquiry into the character of the principal tactical units of which an ancient fleet was composed, their gradual development, their construction, and propulsion. Secondly, we shall find ourselves called to notice the weapons of offence with which these tactical units were armed, and especially the ram which has, owing to

recent developments, a peculiar claim upon our attention. Thirdly, we shall come to tactics proper; minor tactics, as exhibited in the handling of a single vessel, and grand tactics, as illustrated by such instances as we have of the disposition and manœuvring of fleets. Lastly, we may draw a comparison between the fleets of ancient and modern times, their tonnage, their power of propulsion, and the number of men employed.

Of these divisions of the subject, the first will more than occupy our time to-day; but I trust, through the kindness of the Council, that I may have an opportunity of dealing with the remainder at no very distant date.

The subject of ancient galleys is one which, as is well known, has a literature of its own. We can but briefly glance at this. A mere enumeration of the names of the authors who have expended their toil and their acumen upon it would cost us too long. The first, who, after the revival of letters undertook a treatise "*de re Navali*," was the Ambassador at Venice of the French king Francis the First, the Chevalier de Baif. No doubt, the sight of the grand galleys that thronged the blue waters of the Queen of the Adriatic suggested this work to him; but it also started him with prejudices as regards form and construction which made him labour to prove that impossible which the clear testimony of the ancients undoubtedly affirms. Once introduced to literate Europe, the subject, owing to its interesting character and obvious perplexities, became a favourite with the learned, and we find many great names attached to treatises upon it. Our own Sir Henry Savile, Provost of Eton, the great Scaliger, Scheffer of Upsala, Meibom of Amsterdam, and Isaac Vossius, are among those who, in the seventeenth century, entered the lists of the literary tournament "*de re Navali*." Of all these it may be said with truth that while each in his turn criticised the faults of his predecessors he fell into errors no less great himself; not, indeed, in most cases from want of learning, or of industry, or of literary insight, but chiefly because the *data* dealt with were insufficient, and the whole approached from the theoretical and not from the practical side.

During the last century, and indeed up to the last twenty years, Scheffer's treatise "*de re Militari Navali*" remained the best text book on the subject. Montfaucon in his "*L'Antiquité Expliquée*" gives some illustrations from the column of Trajan and the church of San Lorenzo, two of which have been enlarged for this lecture. With this exception there is nothing concerning our subject in the last century that calls for notice, except the ingenious and practical attempt of a countryman of our own, General Melvill, who caused, in the year 1773, a model of a quinquereme to be erected against a high wall behind his house in Pulteney Street, in which we are told that he "performed the motions of rowing with some Officers of both the land and sea service, and all agreed, as well as one of His Majesty's chief ship-builders, who had come to inspect it, that such and no other must have been the construction of the ancient galleys." Though we cannot quite endorse this opinion, since the side of the quinquereme in question appears to have been at a very

improbable angle (45°) to the water, yet we may say that the gallant General's attempt was certainly the most successful of those that have hitherto been made. In the present century Mr. John Howell, about the year 1826, constructed a trireme for the Edinburgh Society of Antiquaries. Of late years the subject has been handled with ability by Mr. Smith of Jordan Hill, whose solution, however, is found to conflict with the evidence of antiquity; and with plausibility by M. Jal, the author of the "*Glossaire Nautique*," and of two volumes on "*Archéologie Navale*." M. Jal's knowledge of mediæval shipping renders both these works extremely valuable, but his imperfect knowledge of Greek and Latin makes his conjectures as to ancient galleys misleading. It is very unfortunate that the trireme constructed at Paris by the order of the late Emperor Napoleon, under the superintendence of the very eminent naval architect M. Dupuy de Lôme, should have been built in accordance with the ideas of one whose interpretations of the ancient authors are at fault.

The honour of having solved many, if not most of the difficulties which have perplexed so many eminent men, must be given to the illustrious German scholar Boeckh, and his pupil Dr. Graser, who in an exhaustive treatise "*de re Navali*" has elucidated satisfactorily the most knotty points of this ancient problem. The discovery at Athens in the year 1834 of a number of inscriptions which proved to be inventories of galleys and their gear, belonging to the dockyard at the Peiræus, dating from a period not long subsequent to the close of the Peloponnesian War, was an event of the utmost importance in the history of our subject. These authentic documents of the Athenian Admiralty, when elucidated by the vast erudition and great critical ability of the author of the "*Public Economy of Athens*," and by the practical sagacity and genuine enthusiasm of his learned pupil Graser, have shed a flood of light upon the whole question of the construction of ancient ships of war.

Would it be out of place here to express a hope that as we have now the data upon which such a work could be undertaken with a prospect of success, funds and enthusiasm may be forthcoming now as they were a hundred years ago, and another attempt be made to reproduce the Attic trireme as it was in the days of Phormion or of Chabrias?

But we must hasten on to describe such a trireme, premising that we shall find but little help in the representations that remain to us on the coins, pottery, bas-reliefs, or pictures of antiquity. In the case of coins the scale is so small that but little can be gathered as to detail, though this field is not altogether barren with regard to the comparison of types of vessels of different epochs and localities. In the other representations the treatment is for the most part so conventional, and so devoid of perspective that but a few things can be learnt. The artist has generally been, as in the case of the representations on the column of Trajan, anxious solely to portray the figures of men and animals to advantage, the accessories, whether ships or houses, being treated in an arbitrary manner, and dwarfed out of all proportion. Still these representations are interesting as pre-

serving certain records of detail, and we shall find them useful for reference from time to time.

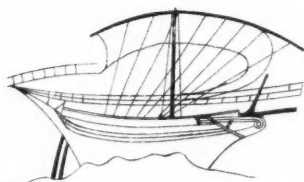
It is important to observe that the ancient ship of war was an improvement on the pirate vessel, just as the piratical craft itself was an improvement on the original merchant galley, and made with a view to superior speed and handiness. The trader, built to carry goods, was broad of beam and slow of speed, and gradually, as heavier weights were to be transported, ceased to depend upon oars, and trusted to sails for locomotion. The predatory instincts of mankind were not slow to equip themselves with craft fitted so as to be speedy enough to overtake the sluggish merchant-man, and at the same time roomy enough to stow away their ill-gotten gains. Not that in early times such gains were looked upon as ill-gotten. The Robin Hoods of the sea, whom we should deem cut-throat villains, were merry gentlemen in their own estimation, and in that of their neighbours, bold buccaneers, who were not ashamed of their profession. But the fact that they were enemies of civilisation was also patent, and the necessity of putting them down became more manifest as the advantages of commerce and free maritime intercourse were more generally appreciated. The mythological elevation to the judicial bench in the infernal regions of Minos, King of Crete, had perhaps, if we may venture a conjecture on such a subject, its origin in the stern justice with which that monarch repressed piracy, and the sense of the benefit that resulted to mankind from his efforts. He is mentioned by Thucydides as the first possessor of a fleet in Greek waters, and the historian tells us that he used it in establishing his Thalassocracy, or maritime dominion, by putting down the pirates. To this end, and thus early was the Greek ship of war elaborated. It is easy to see that the point in which it would be made to excel its pirate foes would be swiftness, and that this swiftness would be attained by construction with a view to carrying nothing but the crew and the necessary provisions and armament. Hence the ship of war was known as the "long ship" *par excellence*. Centuries, however, were necessary to perfect its construction. The ships of the Homeric period, long after Minos, were still undecked, except at the bow and stern, where they had fighting decks. We hear nothing in Homer of the ram, or of the distinction between rowers and seamen and marines, which is so marked at a later period.

In the simpler early vessel any increase in the number of oars necessitated an increase in the length of the ship, till at last a limit was reached, when a loss of handiness in turning outweighed the possible advantage of increased speed. Hence the invention of banks of oars; an invention by which the necessary distance of the "interscalmum," or space between the rowers' benches could be subdivided and utilised in such a manner that the oars might be doubled or trebled in number within the same horizontal space, and yet not clash together when worked in time. In order to comprehend better the principle upon which this improvement was effected, it must be understood from the first that, so far as we know, the ancients never, at any rate until late Roman times, employed more

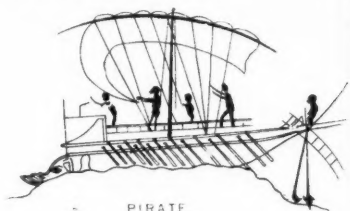
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EARLY GREEK VESSELS.

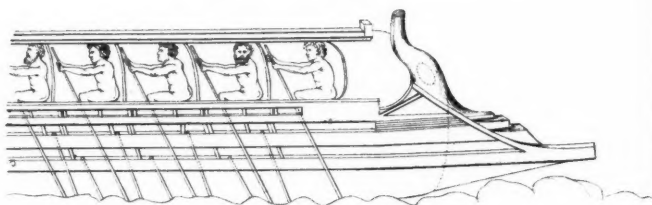
From Etruscan Vase in the British Museum, Date 700, 600 B.C.



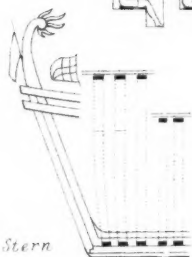
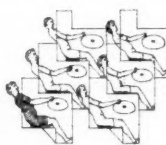
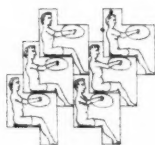
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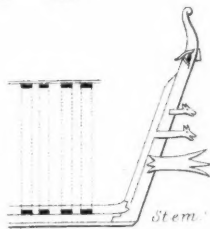
POSITION OF ROWERS



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CONSTRUCTION



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EGYPTIAN BOAT

than one man to an oar. The construction of the Venetian galleys,—whether “*alla scaloccio*,” in which long handled oars were worked by a number of men placed on successive steps rising inboard towards the centre of the vessel, or “*alla zenzile*,” in which the space of the interscalmum was subdivided by oars with handles of different lengths, so that the rower of the longest oar sat nearer amidship than his neighbour—was unknown to the ancients. Nor would it have suited their requirements in the long ships which had but a narrow space along the centre of the vessel, which they could not afford to lose. Accordingly, we find first among ancient ships single-banked galleys of 20, 30, 50, and up to 100 oars each, in which the usual interscalmum of two cubits gives us a conjectural ground for estimating their length. These are all embraced under the term of “*moneres*,” or “*monocrota*,” as striking the water with one beat. The first improvement upon this was the construction of the bireme which if we are to believe Pliny, is due to the Erythræans, Ionian Colonists of Asia Minor. If anything is to be inferred from this, it is that the first step in the improvement of the construction of galleys came from the eastern and not the western side of the *Ægean*, and in all probability was of Phœnician origin. “*Ce n'est que le premier pas qui coute*,” is a familiar and true proverb, and the invention does not deserve the slight notice which has been taken of it in ancient authors. When once the principle upon which increased power could be obtained by increasing the number of oars without lengthening the ship was discovered, it was easy to develop it, and it is worthy of notice that though the biremes gave place to triremes in the seventh century before Christ they ultimately survived them, and in the seventh century after Christ were in use when such a thing as a trireme was hardly to be seen. In like manner they in turn disappeared while their predecessors, the *monocrota*, survived. But to this growth and decay and its analogy in modern time, we may have to refer later on.

By whom the trireme was invented we know not. Probably by the Phœnicians, for there is a statement in the *Stromata* of Clement of Alexandria that the Sidonians were the inventors. All we are told by Thucydides is that the Corinthians were the first who built triremes in Greece, and farther, that an eminent naval constructor of Corinth, Aminocles by name, did not confine his skill to the limits of his own country, but built four of these new ships-of-war for the Samians, of which event he fixes the date at about 300 years before the end of the Peloponnesian war, or about 700 B.C.

At this point we may proceed, taking Graser as our authority, to describe as briefly as possible, the principles of construction and propulsion in the case of the trireme and quinquereme, so that we may have some definite idea of the character of the vessels employed when we proceed to consider the naval tactics of the Greeks and Romans.

And first we must call attention to the fact that two classes of vessels appear to have been employed, distinguished by the name of “*Aphract*,” unfenced, or “*Cataphract*,” fenced, according as the rowers of the upper tier were protected or exposed. Both classes were

decked and floored, but the "Aphract" class carried their decks and flooring lower than the "Cataphract," so that in them the rowers of the upper tier were visible above the side of the vessel; this is distinctly seen in the bireme and trireme, given by Montfaucon from the Column of Trajan.

We have also an instance of the transitional form between the two classes, in the fragment of a bas-relief of an Attic trireme of which a cast is to be seen in the British Museum, and of which a sketch after Michaelis is given here.

You will remember that the disposition of the banks of oars was the problem to be solved, and that the object of arranging the oars in banks was to economise horizontal space, thus obtaining an increase in the number of oars without having to lengthen the vessel. Now, the rowers of the upper tier were called, from the elevated bench on which they sat, *Thranitæ*; those of the middle tier *Zygite*, from the *zyga* or benches, which, in the Aphract class of vessels, traversed the whole breadth of the ship and bore the deck; those of the lower tier *Thalamite*, from the *thalamus* or chamber in which (below the *zyga* in the Aphract class) they plied their oar. These names remained the same for the upper, middle, and lower tiers, even when the invention of Cataphract ships with high decks and more banks of oars than three, had altered the conditions of construction. The Aphract ships had their flooring one foot below the water line and the deck five feet above it.

After the battle of Actium, which was won by the use of the light Liburnian biremes, which were Aphract, the Romans seem to have built most of their vessels after what was then considered the new, but was in reality the old fashion. Previous to that date, from the time of the invention by the Thasians of this system, all the larger vessels of war used by both Greeks and Romans were Cataphract.

In the Cataphract trireme, the space allowed for each oarsman was, according to Graser, eight square feet per man, and this proportion was observed in the larger vessels up to the octireme. In vessels with ten or more banks of oars the proportion allowed seems to have been reduced to seven square feet per man. We know from a passage in Cicero that the space was so completely filled and so densely crowded, that there was not room for an additional man.

The rowers in all classes of banked vessels sat in the same vertical plane, the seats ascending in a line obliquely inclined towards the stern of the vessel. Thus in the trireme, the Thranite was nearest to the stern of the set of three to which he belonged. Next behind and somewhat below him sat his Zygite, and behind and below the Zygite, the Thalamite. The vertical distance between the seats belonging to the same set was 2 feet, the horizontal distance 1 foot. The seat itself was from 9 to 12 inches broad. The lowest rank used the shortest oars, and the difference of the length of the oar in-board was provided for by the outward curvature of the ship's side. The oar ports were vertically 1 foot 3 inches below the handle of the oar when the blade was just touching the water. The lowest or Thalamite oar ports were 3 feet above the water. The Zygite oar ports were $4\frac{1}{2}$, the Thranite

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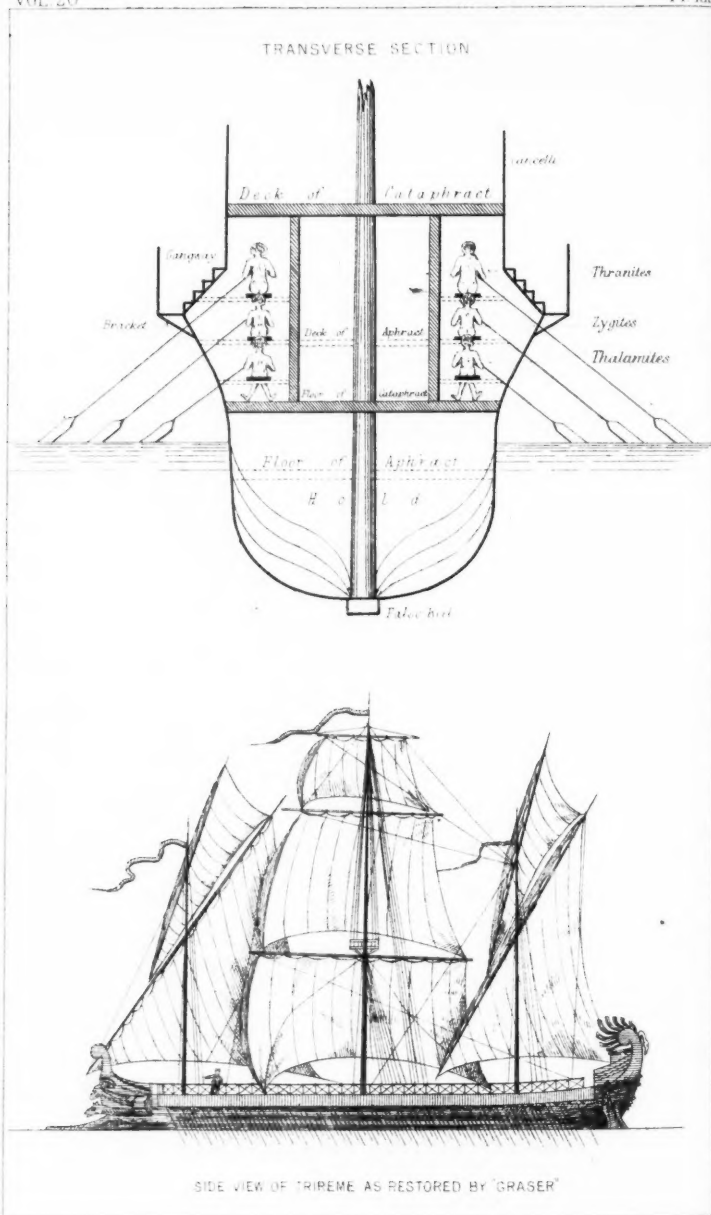
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5½ feet above the water. The vertical distance between the oar ports was but 15 inches, the distance obliquely measured on the ship's side 21 inches. Each oar port was protected by the *ascoma* or leather bag which fitted close over the oar, closing the aperture without impeding the action of the oar.

The seats of the rowers were supported on benches, three feet long, or thereabouts, which ran from the ship's side to beams which rose from the floor, and reached up to the under surface of the deck. These beams were inclined at an angle of 64° towards the stern, and were at a distance of four feet apart. They were technically called the *Diaphragma*. This *Diaphragma*, viewed from inside the vessel, presented the appearance of a succession of staircases, the steps of which were the benches between it and the ship's side. The space between the *Diaphragmata* on either side constituted that part of the vessel in which stood the masts, and in which stowage was possible. It was in the Attic trireme seven feet wide. This arrangement is clearly shown by the model of a section of a Greek trireme which we have here, for which we are indebted to the intelligent and patient labour and constructive skill of a present Etonian, Mr. Chambers.

The length of the oars used in the trireme has been calculated as follows. We know from the Attic tables the length of the oars used by the seamen or supernumerary oarsmen when there was need. These were the longest in the trireme, and they varied from 13 feet 6 inches to 14 feet 3 inches in length.

The Thranite oars must have been nearly of the same length, but could not have exceeded 14 feet under any circumstances.

The Zygite oars were 10½ feet. The Thalamite 7½ feet.

The rowers where the space of eight square feet was allowed per man had a vertical space of 1 foot 3 inches allowed for the rise and depression of the handle in rowing, and a space horizontally of 2 feet 6 inches for its forward and backward motion. It is, however, probable that there was hardly any motion forward of the body, the work being done by falling backwards from the perpendicular.

In all cases the oars used by the regular rowers preserved nearly the same proportion of one-third inboard to two-thirds outboard.

The oars of the upper ranks projected at the point where they reached the water 2 feet 6 inches beyond those of the next lowest tier.

In the case of the gigantic oars of the Tesseraconteres of Ptolemy, a vessel of the size of the "Agincourt," we are expressly informed that the handles were weighted with lead, so as to bring the oar inboard and outboard nearly to an equilibrium.

For the purposes of comparison I have appended a table showing the length of oars used in the different classes of ancient vessels, in the British Navy, and in the University and Eton eights.

Let us now proceed to consider the construction of the vessel itself. In the Cataphract class, the floor was 1 foot above the water-line. Below this was the hold which contained a certain amount of ballast. Through the floor into the hold, the buckets for baling, or as we

should say the pumps, were worked, and that very constantly in ancient vessels, as the use of the word both by the poets and orators in metaphors expressing labour and sorrow, amply attests.

The keel (*τρόπις*) of the early ancient ship appears to have had considerable "camber." Under this was a strong false keel (*χέλυσμα*), which was very necessary in vessels that had frequently to be drawn up on the shore. Above the keel was the kelson (*ἐρύοχον*, columba), into which the ends of the ribs were fastened. Above the kelson lay the (*ἐντέρα τρόπις*) upper false keel in which the mast was stepped. The stem (*στεῖρα*) rose from the keel at an angle of 69° to the water. Within was an apron (*φάλκις*) giving solidity to the bows which had to stand the weight of the beak and its concussion. The stem was carried upwards and curved generally backwards above the forecastle, terminating in an ornament which was called the acrostolion (*ἀκροστόλιον*). The sternpost rose at the same angle as the stem, and was carried high over the poop curving inwards, and finishing in the aplustre, an ornament which may be likened to the feathers on the head of an angry cockatoo; and behind this curved backwards the cheniscus or goose head, symbolising the floating powers of the vessel.

Round the hull of the vessel horizontally at about the level of the feet of each bank of rowers, stretched waling pieces (*νομείς*), and in the case of the Attic triremes, these were again strengthened by long cables (*ὑποζώματα*), which were bound round the ship from stem to stern, and which tightened by shrinking when wet, gave additional security to the vessel, which from her length and narrowness was apt to strain much in bad weather.

From the side of the vessel below the level of the thranitic bench projected the gangway (*παρόδος*, fori), for a space of 1 foot 6 inches, giving a passage of 3 feet in all. This was supported by (*βιάχα*) brackets fitted below and springing from the ribs of the vessel. The gangway was fenced in by an upright bulwark extending the whole length of the space occupied in the ship by the rowers. Here, in the "Parodus," the (*περίνευ*) seamen had their station in action as light-armed troops; who also, when needed upon special occasions, rowed as supernumerary oarsmen with the long oars already mentioned.

The ribs of the vessel from the point where the bracket fitted to them, curved upwards and inwards to a height which was 10 inches above the heads of the thranitic oarsmen. Upon them at this height were placed the cross beams (*στρωτήρες*), which supported the (*κατάστρωμα*) constratum or deck, which was thus a clear 3 feet above the gangway, allowing the marines (*ἐπίβηται*) in action, free play for their javelins over the heads of the seamen in the Parodus.

Beyond the space occupied by the rowers, there was the Parexeiresia, a space of 11 feet in the bows and 14 feet at the stern, which included the (*ἵκρια*) fighting deck already noticed in the Homeric vessels. On either side of the main deck rose the *cancelli*, an open lattice work, and seen as such in the Aphract ships, but in the Cataphracts usually covered with hides, or with the (*cilicium*) goats hair curtains of that manufacture, at which St. Paul and Aquila and Priscilla used to labour working with their hands. This served

both as a protection against the waves and to a certain extent against the darts of the enemy.

At the bow and stern, towers, especially in the Roman vessels, were often erected which gave a vantage height from which to shower down missiles on an enemy's deck.

In very early times we find the elevated forecastle, of which the very name is significant, and which, in some cases, strikingly reminds us of the structure erected at the bows of the "Devastation," serving to protect the fore deck from the waves, and the crew and marines from a raking fire as they approached the enemy,

On either side of the forecastle was figured the eye of the vessel, the centre of which was formed by an aperture which served as a hawse-hole.

At the stern was a raised quarter-deck, on which was a kind of cabin or deck-house forming a shelter for the chief Officer and the helmsman. This quarter-deck was the sacred part of the ship. Here was the image of the patron god, not to be confused with the parasemon, or badge of the vessel figured near the bows. Behind the deckhouse rose the flag staff on which was hoisted the pennant (*tænia*) and probably in the case of the admiral's ship, the red flag that was the signal for going into action, and such other signals as were from time to time required.

On either side the bows catheads (*ἐπ' αὐτῶν*) projected, which in the case of the earlier Athenian triremes seem to have been merely sufficient to hold the anchor. The Corinthians, however, who, as we have seen, were enterprising and clever shipwrights, by strengthening greatly these catheads, were able to receive a blow from the enemy's ram in such a way as to inflict the damage they were intended to receive, an invention which cost the Athenians dear, both in the Corinthian Gulf and in the great harbour at Syracuse.

Between the catheads, and in front of the stem, projected two beams one above the other at some distance apart, headed generally with metal fashioned as a ram's head, or the head of some other animal, which were called respectively *προεμβολίον* and *προεμβολίς*. The purpose of these beams seems to have been to give a racking blow to any vessel pierced by the beak, which projected much further below, and thus to cause her to heel over and shake off, making it easier for the impinging vessel to disentangle herself by backing water.

Underneath was the rostrum or beak, answering to that which we now call the ram, which was a long spur, and in the later periods usually divided into three teeth. Of this we shall speak more fully hereafter.

The trireme was steered by two paddles or rudders, one on either side of the stern of the vessel, to the tillers of which, under the deck, was attached a rope, which, passing through a block on either side and over two wheels on the quarter-deck, enabled the helmsman to turn the two rudders which way he pleased by a single effort.

In the mid space of 7 feet, which we have already mentioned, as lying between the Diaphragmata, stood the main, or great mast, which was square rigged, and before and behind it the two *acati*, fore mast

and mizen mast, which carried lateen sails. The ancients, however, did not use sails in action, trusting then entirely to their oars, so that I will not enter further into the question of the rigging.

We may now (for I fear that we are already surfeited with detail) briefly sum up the measurements of the trireme as calculated by Graser, so as to complete the picture of the vessel such as we may fairly imagine it to have been.

The total length (exclusive of the beak, for which we must add nearly 10 feet), was 149 feet, of which 25 feet belong to the *parxeiresiæ* (11 to the bows and 14 to the stern) and 124 feet to the space occupied by the rowers.

The greatest breadth (which has been calculated in an ingenious manner from the thickness of the hawsers employed for anchoring the vessel, a detail preserved to us in the Attic Tables) at the water line was 14 feet; above, at the broadest part of the beam 18 feet, and with the gangways added 21 feet. The space between the *Diaphragmata* was 7 feet.

The height of the deck in Cataphract ships above water was 11 feet. The draught, $8\frac{1}{2}$ feet. Total height, $19\frac{1}{2}$ feet. Thus leaving $10\frac{1}{2}$ feet for the hold. The height of the aphract trireme from water to the top of the gunwale is calculated at 8 feet. The capacity of the Cataphract trireme, calculated according to the modern formula of measurement gives 232½ tons.

As all the Attic triremes appear to have been built on one and the same model, their gear was interchangeable. It is obvious that such an arrangement in a fleet of from 300 to 400 vessels would offer great facilities in refitting.

The regular crew of an Attic trireme consisted probably of 225 persons in all. Of these 174 were employed in rowing, disposed as follows:—54 Thalamites, 58 Zygites, 62 Thranites, the upper oars being the most numerous, as the contraction of the vessel near the bow and towards the stern afforded less space for the lower tiers. Besides the rowers, there was a force of 10 marines, heavy-armed soldiers, and 20 seamen. The number of marines seems to have varied greatly, and depended much on the style of fighting preferred. Where, as in the case of the Athenians, speed and dexterity in the use of the ram were the chief tactical features, fewer marines were employed. Xerxes' great fleet carried 30 marines to each trireme. We hear of forty picked men on board each Chian vessel at Lade. The Corinthians and Coreyreans had their decks crowded at the battle of Sybota; and the unfortunate Athenians, in the great harbour of Syracuse, where there was no space for their usual methods of manœuvring, found themselves obliged to imitate their enemy's tactics in this respect, with disastrous results.

Of the officers the chief was the Trierarch or Captain, and next to him the master (*κυβερνήτης*), who was responsible for the steering and sailing of the vessel. Each tier of rowers on either side had its captain (*στοιχαρχός*). There was also the (*πρωρεύς*) boatswain, the *keleustes*, who gave the time to the rowers, a steward, a purser, and their subordinates, and last, not least, the ship's piper (*τρηπανλής*).

We have thus completed our sketch of the trireme, and from it we

may also form, without any difficulty, an idea of the larger vessels, quadriremes, quinqueremes, &c. The principles of construction in these were exactly the same, the additional tiers being added by carrying on the Diaphragmata upwards, and at the same regular intervals inserting the thwarts on which the rowers' seats rested. The increase in the size of the whole vessel was not as large as one might at first expect. In order to avoid entering into further detail I have prepared a table from Graser, which exhibits clearly the difference. The increase in the size of Greek vessels began after the Peloponnesian war, and seems to have culminated in the time of Demetrius Poliorcetes, who manœuvred with vessels of sixteen banks of oars, and we hear of nearly every number of banks of oars up to that figure. The huge tesseraconteres of Ptolemy Philopater, with its forty banks of oars, was in reality a costly toy, and of no practical use. A minute and curious description is given by Graser of this great ship, but I fear that we must not delay upon it here.

The Romans who copied a quinquereme which fell into their hands in the first Punic War, appear to have used vessels chiefly of that description. They did, however, build much larger vessels up to the time of Actium, when the defeat of Antony and Cleopatra's great ships, by the light Liburnians, altered the whole fashion and prepared the way for the disappearance of the great banked galleys, and the almost complete loss of the knowledge of the principle on which they were constructed.

An interesting question arises at this point, and one not easily solved, as to the pace at which these galleys could be moved. We may make a comparison between the man-power of the galley and the horse-power of the modern ship of war. The difference in the bulk to be moved is very great and the inferences derived may be misleading. Taking, however, one horse-power to be equivalent to between 7 and 8 man-power, we may say that the trireme was propelled by a force equal in amount to about 24 horse-power, the quadrireme by about 32 horse-power, the quinquereme about 42, and so on, increasing a little more than 10 horse-power for each tier of oars added. It is, however, obvious, that the man-power cannot be counted upon as applied to the oar with that uniformity which is attained by the use of steam in the case of horse-power.

There is a passage in Xenophon (*Anab.* vi, 42) in which it is stated that from Byzantium to Heraclea, in Bithynia, a distance of about 150 nautical miles, could be rowed in a day by a trireme, and was a very long day's work. Now, allowing eighteen hours' daylight for the work, a speed would have to be maintained of over eight knots. This, considering the shape of the vessel and the man-power employed, may perhaps seem excessive, but if such a speed could be maintained on an average for a whole day's voyage, it is obvious that in action or when any special effort was required, a greater pace, say perhaps 10 knots, could be attained.

Such speed we may believe was attained, if at any time, in those famous encounters, in which the vessel itself was the missile hurled at the enemy, when, in the prime of her Thalassocracy, the rapidity

and agility of the trireme of Athens was the terror alike of her Greek and her Phœnician foes. Long and careful training had perfected the system of rowing and steering. The vessel itself was shaped for speed by the cunning master builders of a people whose eye for form has never been surpassed. To the attainment of the highest possible speed everything was sacrificed, till at last the thin sharp bows were incapable of standing a concussion with the heavy mass presented to them by Corinthian and Syracusan constructors, and suffered themselves the damage they were intended to inflict upon others.

Time will not allow me here to follow out in detail the second part of my subject, the development of the ram in its successive types, from the sharp Assyrian spur, the old Phœnician fish-like snout, the early Greek boar's head, which we can trace down to the third century on coins, to the three toothed rostrum of the early Macedonian and later Roman epoch.

I should have liked, had time sufficed, to have touched upon some of the instances of single encounters, such as those of Artemisia, and of the Samothracian vessel at Salamis, and of Phormion's Captain off Naupactus, and further, to have pointed out the causes why the (*προσβολή*) direct attack stem-on, that, which in the eyes of the Athenian was the unskilful and unseamanlike manœuvre, prevailed over the skilful attack on the enemy's quarter or side (*ἐμβολή*), success in which was the glory of the Attic sailor; to have shown how, as Thucydides aptly calls it, "land fighting at sea" became the rule; how grappling irons, and boarding bridges, and ponderous missiles, ultimately superseded ramming tactics to such an extent that Brutus, off Marseilles, exposed the sides of his great vessel on purpose to the enemy, trusting to the thickness of his timbers, and making sure of destroying his smaller antagonists with the ponderous weight swinging from his yardarm.

Time, however, forbids me to enter upon these points; and in conclusion, if I have not already tried your patience too long with what I fear has been a somewhat dry mass of details, I would ask you to leap back with me in thought over long centuries of the past that we may imagine ourselves standing in the Peiræus, with the glories of Athens behind us, the great spear head of the goddess who guards the Propylæa flashing the reflected ray far across the Saronic Gulf, where in front of us lies bright Salamis, and beyond, Ægina, once called the eye-sore of the port in which we stand.

It is a busy bustling scene, one that would rival our own Portsmouth and Plymouth in a time of war. There are the long sheds in which the triremes have been housed during the winter, but they are mostly empty (for is it not April?), and the rollers on the long stone ways have run down many of the dry keels and launched them already. It is April, 415 years before Christ, and the Athenians are preparing their fleet for their grand and fatal expedition to Sicily. They dream of conquest, of the conquest of the golden west. The triangular land is the stepping-stone to greater things beyond. Nearer home there are enemies, but ambition is stronger than fear, and we fit out our fleet and send our picked men for distant enterprises, while the enemy is not

very far from our own doors. And so the dockyard is all life. Look at the huge coils of hawsers, at the rows of anchors, at the stacks of oars, all carefully marked, all arranged with precision. There in the harbour are already lying some hundred sail, some few ready to start for Coreyra, but most still fitting out with all haste. What shrill pipings, what a clatter of tongues, what a smell of pitch. Yonder goes Lamachus the busiest of the three Admirals, and the most practical. He sees to details with the eye of a master who means business, and knows that real work is grim work. Fine young Alcibiades will be down in the afternoon on a four-in-hand from town. He gives himself airs, but is clever and brilliant, and handsome, and with the exception of some old sea dogs, hard bitten ones who mislike the smell of jockey-club and musk, and growl about effeminacy and affected manners, his subordinates like him well enough. And here comes kind well meaning Nicias, a good man, and well esteemed, but hardly the stuff for such a command, though his good fortune has been tried up to the present time and has never been found wanting. Truly it were better to die young than to be so fortunate. And the chiefs being there the work is not slack. The hammering goes on with redoubled vigour. The petty officers have their hands full and look serious, the comptrollers of accounts are in dismay, the trierarchs are sure they will be ruined. But there is a strong will behind them all, and a nation's behest is not easily disobeyed, and fancied impossibilities both as regards time and space are reduced by hard work to possible proportions. And so the fleet is fitted out, and if we will return after a few days, we shall see in company with all Athens, a spectacle which none will forget to his dying day, which now may draw tears of mingled pride and sorrow, pride patriotic, and sorrow for those who are going away, but the recollection of which hereafter will command, alas! far more bitter tears of shame and grief; shame for country humbled, and grief for those who will never return. There in the glorious bright blue bay, float, fully equipped, as we have described, one hundred triremes, 60 as men of war, 40 as transports. They are to start solemnly with a nation's prayers and a nation's blessing. The pennants are waving in the breeze, the acrostolia are crowned with flowers; the piper sounds the rowers to their seats, and then silence is demanded by the long blast of the bugle from the Admiral's flag-ship, caught up and re-echoed by the ships of each of the three divisions. Then are the prayers offered and the libations poured to unwilling deities by brave hands, and hearts ignorant of the future, and the signal being forthwith given, more than 17,000 oars dash into the water together, and the whole fleet starts in one splendid trial of speed towards Ægina. We strain our eyes after them until the white sails are set, and the hope and strength of Athens fares onwards out of sight, to a distant enterprise, the issue of which with all its pride and all its folly, with its glory and its misery, will adorn history, and point a moral for maritime powers in all time to come.

APPENDIX.

*Table showing Comparative Length of Oars.**Athenian Navy.*

	Inboard.	Outboard.	Total.	Blade.
	ft. in.	ft. in.	ft. in.	ft. in.
Quinquereme.....	6 6	13 0	19 6	
Quadrireme.....	5 6	11 0	16 6	
Trireme, Thranite.....	4 6	9 0	13 6	
" Zygite.....	3 6	7 0	10 6	
" Thalamite.....	2 6	5 0	7 6	

British Navy.

	Inboard.	Outboard.	Total.	Blade.
	ft. in.	ft. in.	ft. in.	ft. in.
Largest.....	5 3	12 9	18 0	0 5 $\frac{3}{4}$
Medium.....	3 5	11 7	15 0	0 5 $\frac{1}{4}$
Smallest.....	2 6	9 6	12 0	0 5 $\frac{1}{4}$

Oxford University Eight.

	Inboard.	Outboard.	Total.	Blade.
	ft. in.	ft. in.	ft. in.	ft. in.
1876.....	3 8	9 1	12 9	0 6

Eton Eight.

	Inboard.	Outboard.	Total.	Blade.
	ft. in.	ft. in.	ft. in.	ft. in.
1875.....	3 6	9 0	12 6	0 5 $\frac{3}{4}$

Table of Measurements, &c., from Graser.

Class of Vessel.	Trireme.	Quadrirème.	Quinquerème.	Tesseracon- teres.
Length, exclusive of rostrum	149 feet.	158½ feet.	168 feet.	420 feet.
Breadth at waterline	14 "	16 "	18 "	57 "
" greatest	18 "	22 "	26 "	76 "
" with <i>πᾶροδοί</i>	21 "	25 "	29 "	79 "
" between <i>διαφράγματα</i>	7 "	9 "	11 "	49 "
Draught of water.	8½ "	10 "	11½ "	20 "
Height of deck, Cataphract	11 "	13 "	15 "	44 "
" " Aphract.	8 "	10 "	12 "	
Tons measurement	232½	365	534	11,320
Number of rowers	174	240	310	4,054
Estimated horse-power	24	32	42	540
Crew, total complement.	225	300	375	7,500

Triaconter, 54 feet long,
 Penteconter, 90 feet long, } two masted.

The CHAIRMAN: I am sure that we all feel deeply impressed with the fact, that we have just heard a most interesting lecture, and not only a very interesting, but a very learned and eloquent one, especially in the moving words with which it was concluded. But what I also myself feel, and strongly feel, in consequence, is a deep regret that a more fit and competent person is not in the chair on this occasion. For I was required to fulfil this honour purely through having a larger acquaintance with the localities referred to in the lecture—the scenes of the great naval battles and contests mentioned—than most of the members likely to be present.

That advantage has undoubtedly tended greatly to enhance the interest of the lecture with me, and I am sure that there are some present who are likewise familiar with some of these localities, and have felt a similar enhanced interest.

The lecturer referred to, and recommended to your notice, Mr. Smith's book, on "The Voyage of St. Paul." Mr. Smith was an intimate friend of mine, and spent a winter in Malta whilst I was there; and as an able geologist, he had intended, during his stay, to work out the geology of Malta. But, as I happened to be a mere smatterer in this branch of science, I had been induced just previously to do the same. Mr. Smith thus finding that the labour of his hope and love had been somewhat forestalled, as he himself told me, was induced to take up the voyage of St. Paul, from its special interest in connection with Malta. We were, therefore, frequently in communication with regard to it, and to the construction of the ships, mode of rowing them, &c., of the ancients of that date. Mr. Smith has in that work given a chapter of great interest upon the form and position of the oars and rowers in the quinquiremes, triremes, &c., as he had conceived them to be. But I must confess that, although there was much that was new in it bearing upon the subject, yet it did not fully satisfy me that we yet understood the exact construction of the ancient Greek and Roman ships of war, so as to know how the rowers of the several tiers were placed. Now, however, I fully understand it, after the beautiful illustrations, and the clever model made by the Eton boy, that has been so often in the hands of the learned lecturer during the delivery of his most instructive and most interesting discourse. I must not, however, try your patience further with more remarks of my own, but at once fulfil the duty that now devolves upon me, of asking you to accord your hearty thanks to the learned lecturer for his very instructive and interesting lecture, and also to the Eton boy for the clever model his talent has produced, and that has tended so much to assist the lecturer in his description, and ourselves in understanding the difficult points of the subject.

LECTURE.

Friday, June 2nd, 1876.

REAR-ADMIRAL T. A. B. SPRATT, C.B., F.R.S., in the Chair.

ANCIENT NAVAL TACTICS.

PART II.

By the Rev. EDMOND WARRE, M.A., Eton College.

IN resuming the subject of Ancient Naval Tactics this afternoon, I propose to follow the lines laid down in my first lecture, and to treat in the first place of the weapons of offence used in ancient vessels, and of the means employed to meet them. The consideration of the progressive improvements and alterations made for offensive and defensive purposes in the construction of vessels, and their armament will naturally bring us to our main and proper topic—the naval tactics of the ancients. These will fall under two heads: *minor tactics*, which concern the handling of a single vessel, and *grand tactics*, which concern the handling of fleets. For illustration, we shall have to refer to incidents of Greek and Roman warfare recorded by ancient authors, and it is possible, though I am not very sanguine upon this point, that the consideration of those ancient conflicts may be suggestive to those whose attention is given to the important subject of modern naval tactics, which have at least the use of the ram in common with those of the ancient world. Lastly, if time allows, we may glance at the growth and decline of the ancient marine, and the causes that produced these effects, and attempt to draw some comparison between the size and tonnage of ancient and modern fleets, and the number of men employed in them respectively.

Of the weapons of offence with which ancient ships were armed, the ram, or, to speak more correctly, the beak, was for a long period the most formidable, and that from very early times. If we are to believe Pliny, the invention was due to one Piseus, a Tuscan pirate chief, who, according to a quotation given from Manetho, was master of Italy for a considerable time. There does not, however, seem to be much in support of this statement; all the other evidence we have points to Egypt or Phœnicia, the east, and not the west, as the cradle of this

invention. There is, as I have already said, no direct mention of the beak in Homer, who, however tells us how

“round the vessel's prow (*στειρή*)
The dark waves loudly roared as on she rushed
Skimming the seas and cut her watery way,”¹

a passage which seems to me to indicate that an advance in build from the earlier type had already been arrived at in Homer's time. The later poets, indeed, speak of the war-vessels of Greeks as armed in Trojan times with brazen prows, and in a fragment of *Æschylus*, Nestor's ship is called a ten-beaked or ten-spurred ship (*δεκέμβολος*). I am not, therefore, disposed to regard the silence of Homer as proving that the beak was unknown to the Greeks in Trojan times.

We have in Diodorus a statement regarding a conflict which has been claimed as the most ancient sea-fight whereof this world holds record, to the effect that “Semiramis, when she reached the Indus, found the King's fleet prepared for battle, put her soldiers on board her own flotilla, attacked him, and after a desperate struggle, in which nigh a thousand vessels were sunk, won the victory.” This statement finds support in several other passages, and amongst them in one from Suidas, in which he says that “Semiramis had constructed in Bactria 3,000 vessels of war with brazen beaks (*χαλκίμβολοι*), the crews for which were furnished from Syria, Phœnicia, *Ægypt*, Cyprus, and Cilicia.” Such legendary splendour surrounds Semiramis that one is quite sorry to find her either sublimated into a solar myth, or reduced by a prosaic inscription to the position of consort to Pul, King of Assyria, and her date brought down from the time of Abraham, assigned to her by Eusebius and Augustine, to the much later figure of 740 B.C. There is in the British Museum a very spirited representation of an Assyrian war-galley, moving at full speed, such a galley as we may imagine the warrior Queen to have employed. The beak in this case has the character of a pointed spur attached to the bows of the vessel at the water-line.

If ancient authors fail to tell us any more than this concerning the invention of the ram, we must turn for information to those early representations of vessels which the venerable and ever fresh antiquity of *Ægypt* has preserved for us.

In his earliest efforts to construct a ship from sawn planks, man found himself assisted by the natural tendencies of the material employed. The natural curvature of planks fastened together in the middle, on a curved pair of ribs, which would represent what we should call the midship section of the vessel, determined in the first instance to a great extent the shape of the bow and stern. These in the earliest vessels were nearly alike, a feature which though it obtained in trading vessels to a late period, is wrongly attributed to all ancient vessels by Mr. Smith, of Jordan Hill. We see this early type clearly shown in the representations which so often occur on *Ægyptian* sarcophagi of the craft in which the souls of the dead are

¹ *Il.*, i, 492. Lord Derby's Trans.

being carried on their last voyage by attendant deities.¹ These are worthy of our attention, not only as being extremely ancient, but as giving us a point of departure in the history of the construction of the beaked prow. Both ends of the boat are alike sharp, and upon both the superstructure is carried in a curve backwards and upwards so as to afford protection from the waves, presenting us with the rudimentary outline of that which was afterwards to develop into prow and poop respectively. The top of the structure above the prow is often flattened and covered in, and upon it is seated a guiding deity, the prototype of the "look-out" man at the bows in later time. The keel, as is evident, has great camber fore and aft, bad for speed, good for turning quickly, useful in the case of a boat steering down the current of father Nile, but not so advantageous when some distant village had to be reached across his wide inundations. The *loi d'épargne*, the law of least effort, which as part of the many-sided necessity that rules so largely in human affairs, is the mother of manifold invention, would soon, where human labour at the oar was too lavishly expended, teach men, as they built their vessels, to decrease the upward curve towards the bow, and to bring it down nearer and nearer to the water, by fastening the planks together, end to end vertically. Thus by degrees the forward part of the vessel was immersed in its whole length, while the high stern preserved the advantage of rapid turning-power. Similarly when the vessel was used for purposes of attack, and the experience of charging an enemy's ship had been ensued, the adaptation of the bow for this purpose by prolonging it with projecting timbers would naturally suggest itself. The subsequent addition of a metal boss or pointed share, so as to inflict either a racking or piercing blow, was an obvious improvement to those whose business it was to plough the main. But the earliest type of artificial beak consisted simply in the prolongation of the keel-timber beyond the point at which the stem of the vessel was carried upwards.

That all these successive improvements in construction were due in the first place to the Egyptians is in a high degree probable. That they possessed a fleet and navigated the Mediterranean and Red Seas at a very early period is tolerably certain, even if the statement made by the priests to Herodotus (Book II, 102) concerning Sethi or Sethosis, that he navigated the Erythrean Sea or Indian Ocean in a fleet of ships of war, be fabulous. The legends of Danäus and Ægyptus connect Egyptian maritime enterprise with Greece, and in a remarkable passage Euripides (Troades 127) calls the ropes of the Greek vessels the "twisted teaching of Egypt."

Did the Phœnicians—(the chief rivals of the Greeks in the carrying trade of the Mediterranean, and certainly their teachers in many things connected with ship building from very early times)—did the Phœnicians in the first instance owe their knowledge of ship-building to Egypt, or was it of native growth? The earliest representations of Phœnician vessels that we have are of a much later date than those on Egyptian monuments, and are many stages in advance of them in

¹ See Plate XX.

form. They are in most respects similar to the early Greek types, which probably were borrowed from them. In these, both on coins and vases, we have the projecting beam for a beak, and a nearly straight bow and forecastle rising above it. The coin of Phaselis, a town of Lycia, of which we have here a drawing, and the figures of ships taken from Etruscan vases belong in all probability to a period between 500 and 600 B.C. They are the earliest that I have been fortunate enough to find.

The construction of beak here shown had in itself manifest disadvantages, which would soon make themselves felt, especially in a sea-way, when the force of the waves, as they tumbled home into the angle formed by the projecting spur, would soon be felt to impede the vessel's way, and to weary the rowers. And secondly, the weight of the projecting spur, especially if any metal was added to it, would be such as to involve a great strain on the fore part of the vessel, and further, being unsupported, it would in the shock of a concussion be liable to break off and endanger the safety of the ship.¹ We can fortunately trace the improvement that these considerations were sufficient to introduce. We have here a drawing from a coin of Samos, of which the date is given as about 490 B.C., in which the type has altered so far that the angle before noticed has been filled up by carrying on the waling-pieces that strengthen the hull of the vessel, and filling in on a gradually rising and receding curve, while from the point at which the upper waling-piece projects beyond the stem, the stem itself is carried up and forward in a bold line, so as to meet and divide the crests of the waves that might rise to that height. The whole structure marks an advance in the seafaring habits of the Greeks. The vessel thus constructed at the bows had a general resemblance to a pig's face, or, to speak more artistically, a boar's head; and it is interesting to find an historical incident connected with this matter. Herodotus tells us (Book III, 59) that the Samians who had risen against the tyrant Polycrates, when deserted by the Lacedæmonians, who had come to their aid, after making a raid on the island of Siphnos (and extracting one hundred talents of gold from the pockets of the inhabitants), settled in Cydonia, in Crete. There they flourished till they were beaten by the Æginetans in a sea fight, who, after the victory, cut off the bows of their ships, which were shaped like a boar's head, and placed them in the temple of Athene, in Ægina. The date of this battle is about 516 B.C. The coin is of somewhat later date, but it bears witness to an improvement in ship-building which is thus confirmed incidentally by Herodotus; for the circumstance would hardly have been mentioned if the shape had not been regarded as a novelty. That the Samians themselves claimed it as their own invention and were proud of it, may be inferred from the fact, that it became with them a national symbol, which survived on their coins even as late as the first century B.C. That it was recognized as such by the other Greeks, and especially by the jealous Athenians, may be gathered from the account given by Plutarch in his *Life of*

¹ Compare the instance given by Polybius, Book XVI, in the battle between Philip and the Rhodians.

Pericles, wherein he tells us that the Samians taken prisoners in the war which ensued upon the Samian revolt in 440 B.C., were branded by the Athenians with a "Samana," as it was called, and explains, that the "Samana" was a kind of ship invented by Polycrates, and was boat-faced in the curvature of prow (*ῥόπρος τὸ αἰώνα*). If Polycrates was the inventor, it is interesting to notice that he was closely connected by friendship with Amasis, the Egyptian king; but, at the same time we may observe a development towards the same type upon coins of Phaselis, of a date quite as early as that which we have just noticed. I would also observe that an intermediate stage, showing the improvement begun, but not yet fully carried out, is discernible in the representations of some of the pirate vessels on the Etruscan vases.

I may mention at this point that, so far as we can gather from coins, the Persian and Greek types of beak seem here to part company. The coins of Pharnabazus of between 400-380 B.C. show, with very little modification, the type we have noticed in the earlier coin of Phaselis. Have we not here a clue to the maritime superiority of the Greeks over the Persians; progress in adaptation of means to ends on the one hand, prejudiced adherence to that which has led the way to success in past time on the other? A nation which cannot invent for itself, or, at any rate, assimilate the inventions of others, can never command the seas.

The Samian invention was not in any way a perfect one, but it was a real step in construction. That it was somewhat clumsy may be inferred from the remark that Plutarch makes that the "Samana" was "low in the fore part and wide and hollow in the sides, making it "light and expeditious for sailing." The Athenians when their necessities had forced them to become a naval people, produced a vessel calculated for greater speed and ramming power. Fortunately, we have a representation of part of an Athenian trireme which enables us in some measure to judge of the progress made. The details of construction are clearer than in the representation given on coins. Here is a vessel built for speed, with lines as fine as those of a racing yacht.¹ The lowest waling-piece is carried out to a sharp point, which rises at some little height above the water, so that in smooth water it would always be clear. The entry is extremely sharp and fine, and gives at the first glance the idea of great speed. Such a vessel was well adapted for the Athenian tactics, which were based on rapidity and dexterity of movement. But the weak points are evident. A bow so constructed was capable of piercing the side of any vessel of the period to which it belonged; but as I have noticed in my previous lecture, the Corinthian shipwrights accurately gauged the force of impact with which a vessel of this build was capable of delivering a blow, and proceeded to strengthen the bows of their ships in such a way as to be able, not only to withstand the full force of such a blow, but to cripple the vessel that delivered it. This they effected by shortening the projecting prow and making the bows of their vessels much thicker and stronger, and at the same time by greatly strengthen-

¹ See Plate XX. Athenian galley with power.

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PERSIAN.



PERSIA
B.C. 450.



PHARABAZUS
B.C. 400-380.

GRECIAN.



PHASELIS
B.C. 500.



SAMIAN
B.C. 494-76.



CIUS
B.C. 330-310.



DEMTRIUS
B.C. 294-87.



ANTIGONUS
B.C. 292.



LEUCAS
B.C. 200.

ROMAN.



B.C., 350.



B.C. 320-270



B.C. 320-270



B.C. 216-199.



B.C. 38.



B.C. 91.



HADRIAN.

ing the catheads (*καῦτιδες*) that projected on either side of the bow. These catheads were constructed of heavy balks of timber, supported both from within and from without by wooden stays of about nine feet long, stretching from under them to the sides of the ship. These when the attack of the enemy's vessel was received "stem-on," which was, as we shall see hereafter, the form of attack which they took care to invite, broke up the forecastle and upper parts of the hull of the Athenian vessels so as to make them unseaworthy. The event, as we know, answered the calculations of the Corinthians, and from that moment the Athenian ceases to be the representative type of Greek war-vessel.

Yet the type itself is not wholly lost, and I think I may venture to say, though the subject is obscure, and I have not had all the opportunities that I could wish of following it out, that the subsequent Greek types oscillate between those of Athens and of Corinth. For it was only in close waters where there was not room for manœuvring at large, that the Corinthian build was certain of its advantage. In the open sea, speed was still indispensable for victory. Hence the question for the shipbuilder in the construction of the prow of his vessel was how to combine speed and strength. The invention of larger vessels with many banks of oars gave greater speed and greater force of impact. To meet this, heavier timbers were used in construction, and the waling-pieces became thicker and the bows of the vessel were not unfrequently armour-cased with bronze. The beak, no longer projecting so far as in the Attic trireme, was armed with three teeth so as to inflict a crushing blow without incurring the danger of being entangled in the enemy's vessel, a danger which often proved very real in action, as the following instances show:—In the course of the battle of Salamis, an Æginetan vessel rammed a Samothracian vessel. The Samothracian marines were expert in the use of the javelin, and while their own vessel was sinking, and before the Æginetan could clear himself of their wreck, they cleared his decks and boarded and took possession of his ship. Much later in a battle between the Illyrians, 229 B.C., with Acarnanians as their allies against the Achæans off Paxo (Polyb II, 10) the Illyrians used this stratagem against the great quadriremes and quinqueremes of their antagonists. They yoked their light vessels together by fours and exposed them sideways to the onward rush of the enemy, who thus became hampered with the wrecks of the innermost vessels, while the Illyrians from the outer vessels at once boarded and swept the decks, and in this way became masters of four quadriremes, and of one quinquereme with all its crew.

It would greatly exceed the limits of a single lecture if I were to delay much longer on the construction of the Greek prow. I will merely ask you, therefore, to notice the four instances that I have selected from coins, for casts of which I am indebted to the kindness of the authorities of the numismatic department at the British Museum. The first is a coin of Kius in Bithynia, which shows the influence of the Athenian type very clearly. The bows, however, are not so long or sharp as in the Attic trireme, and there is a sheer downwards in the main

waling-piece, which terminates in a trident beak. The timber of the second waling-piece is prolonged into a second spur (*προεμβόλιον*), and above again we see one if not two upper spurs. The *epotis* is very large and projecting, and shows the influence of the lesson of Syracuse taught a century earlier. The second and third coins are of about forty years later, and belong to the time of the successors of Alexander. The first, one of Demetrius Poliorcetes, represents, I think, the prow of one of his large vessels, for the construction of which he was justly renowned. The trident beak is here prefixed to a piece of timber, which has a straight run, and projects but little. The spurs above also are short. But the Corinthian type is manifest. There is an air of massive strength about the whole, which is wanting in the previous instance. The *epotis*, the forecastle, and the double timbers of the deck, all combine to give the idea of solidity and weight. The next instance, from a coin of Antigonus, is more ornate. I would remark only on the prominence of the beak and upper spurs, and the difference of the angle at which the stem is carried upwards as compared with the previous instance. The fourth and last Greek coin is of Leucas, now Sta. Maura, an ancient colony of Corinth. It is of a date when Greek independence was drawing nigh to its extinction, and the Romans were already masters of the sea. Compare this type with that of the Athenian of two centuries before, and the difference of build is at once apparent.

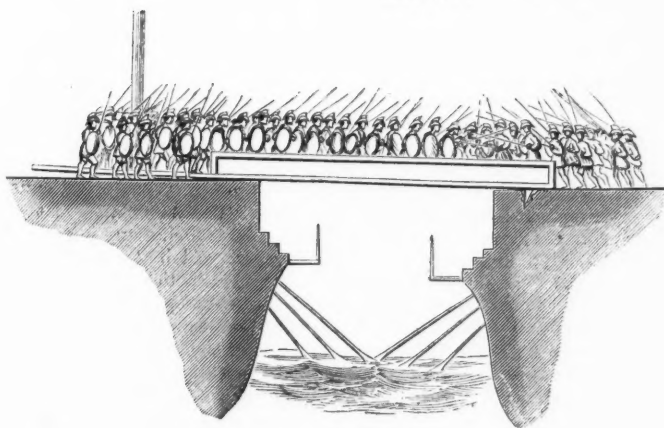
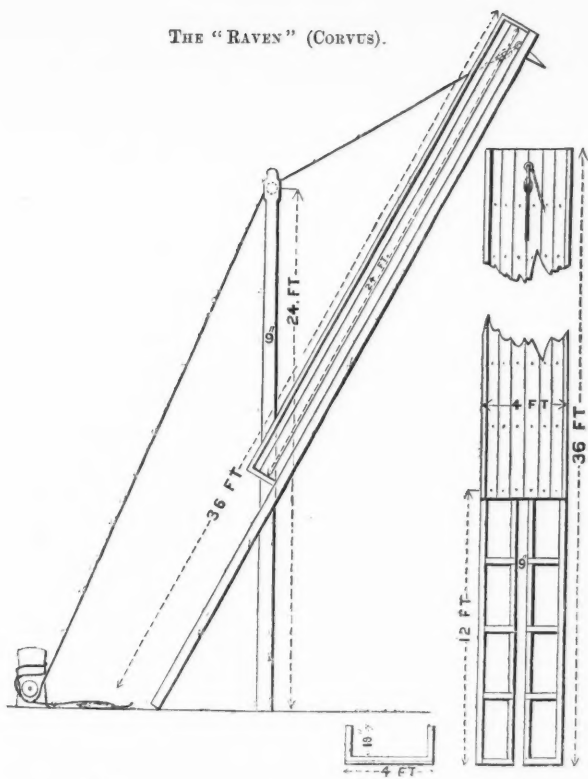
Let us now pass from Greek to Roman prows, of which I have selected for comparison seven instances from coins in the British Museum. Of these, three belong to a period previous to the first Punic war; and I mention this, as it has been often too readily assumed that the Romans had never engaged at all in maritime warfare before that time. The treaty however with Carthage, which was made in the time of the kings, proves that even as early as the fifth and sixth centuries they were familiar with the sea. The appointment of *Duumviri Navales*, officers charged with the duty of equipping and repairing the fleet, an office which existed before the year 311 B.C. (as we find the right of election of these officers then transferred to the people)—is in itself sufficient evidence of the existence of a fleet. The coin, of which we have here a drawing, dates from the year 350 B.C.; and so far as can be distinguished from the rough outlines which it presents, is of a somewhat different type from the Greek, much more rude and bluff, the stem carried forward at a sharper angle to the water, and terminated in a curved acrostolion of much shorter and stouter build than those observed in the Greek types. If the Romans did borrow from the Greek cities of Italy in the matter of naval construction, we may be sure that they departed from their models freely to suit their own ideas of practical utility. In the two next instances, which belong to the half century preceding the first Punic War, we have two varieties of construction belonging to the same period. In the one, the beak is depressed, and the timbers that support it are of less thickness in themselves, but compacted together by means of cross-pieces. It seems to represent an attempt at a construction which should save weight without sacrificing strength. The

other is more decidedly Greek in type, showing a single piece of timber carried out straight into the trident beak, and similarly a straight single piece supporting the upper spur (*προεμβολιον*.) It is probable that these vessels were triremes. They may have belonged to that fleet which was forbidden by the treaty contracted with Tarentum about the year 303 B.C. to sail beyond the Lacinian Promontory, or to the fleet of ten Cataphract ships which, under L. Cornelius in 282 B.C., violated that treaty, and being attacked by the Tarentines, suffered a loss of four vessels sunk and one captured. The long struggle, however, of the Samnite wars had engrossed the attention of the Romans almost completely in military matters; and the very terms of the treaty, the infraction of which met with such signal chastisement, show that their efforts by sea were of secondary consideration to them. The war with Pyrrhus succeeded, and at the opening of the first Punic war in 264 B.C. Rome was practically without a fleet. Her armies marched by land to Rhegium, and thence, in the absence of the Carthaginian fleet, crossed the narrow strait by such transports as they could collect from their Greek subject cities. It was not till the Carthaginian fleet, ravaging the coast of Italy, brought home to them the real conditions of the contest upon which they had entered, that the Romans turned their attention in real earnest to the sea. Hitherto the conquest of Italy had occupied their thoughts, and Italy was to won by land. But the first Punic war was the commencement of a struggle for a wider empire, the empire of the ancient world. No empire is ever won, no, nor ever maintained, without the mastery of the highways that are the means of communication; and the first step to the empire of the ancient world meant the command of the Mediterranean. I am therefore tempted here to dwell upon the construction of the Roman fleet in the first Punic war as an event unparalleled in history, and surely one of the gravest significance, if by a sudden effort a purely military nation could take to the sea, and with the aid of a new mechanical contrivance, in a few years utterly crush and practically extinguish, not only the fleets of the first maritime power in the world, but the very spirit which made those fleets formidable. Hannibal may ravage Italy, but he has reached Italy by land and not by sea. He may march to the very walls of Rome, but no Carthaginian fleet dares to support him at the mouth of the Tiber. We hear of one or two skirmishes, but of no great naval action. It is not too much to say that from the close of the first Punic war to the days of Ricimer, no foreign nation dared to contend against the maritime power of Rome. Actium indeed decides the fate of the world, but Actium is Rome arrayed against herself.

The transference of maritime dominion is closely connected with the subject immediately under our consideration, the use of the ram. We have already seen how, by the improvement in the construction of the bows of their vessels, the Corinthians and Syracusans were able to paralyse the superior nautical skill of the Athenian. Brute force, thickness of timber and armour-plating, patient attention to detail, and a steady perception of the end in view, prevailed over *élan* and seamanship and quickness of manœuvring

power. The same lesson is now taught again upon a larger scale, and with far more momentous results to the world. The Romans had no fleet,—perhaps a few triremes, but nothing that could keep the sea against the Carthaginian quinqueremes, ships of five banks of oars, which were the line-of-battle ships of the day. By chance, in the year 260, one of the Carthaginian vessels of this rate was driven ashore and captured by the Romans. With the practical sagacity and unswerving energy of purpose which distinguished them, they determined to construct a fleet upon this model. The timber was felled, the shipwrights set to work, and, within two months of the time when the trees were standing in the woods, a fleet of a hundred vessels, each 168 feet long and of 534 tons measurement, had been constructed. Not only this, but the future crews meanwhile were placed on framework set up upon the land, and there and then practised in the motions of rowing to the voice of the *keleustes*. When all was nearly ready, the Admiral, Cn. Cornelius, set sail in advance with seventeen ships, leaving orders for the fleet to follow. He sailed, and within a few days was taken, ships and all, by the Carthaginians. Meantime the rest of the fleet was under way. The ships were badly built, and terribly slow, as might have been expected. Defeat was a certainty; but some ingenious spirit suggested to Duillius, who now assumed command, the construction of a novel engine of warfare, destined to render useless the rams of the enemy. This contrivance was called the “raven” (*corvus*). As described by Polybius, it was of the following character: at the prow of each vessel was fixed a mast 24 feet high, 9 inches in diameter. This had a pulley on the top. Attached to this mast was a long ladder-shaped construction, with planks nailed across it, 4 feet wide and 36 feet long, with an oblong slit in the cross-planking in the first 12 feet of the ladder. This long ladder or gangway had a balustrade about the height of a man’s knee running the whole length of each side. At the end was fastened an iron claw, which Polybius compares to the knocker of a door, only sharpened into a point. This had a ring on the top of it, so that the whole was, he says, not unlike the long trays used by bakers in their ovens. To this ring was attached the rope by which, as a ship came up for the purpose of ramming, aided by the pulley on the top of the mast, they let the ladder, which thus formed a boarding bridge, fall on to the deck of the enemy’s ship, sometimes over the prow and sometimes slewing it round when the attack was on one side. The weight of the boarding bridge falling drove the sharp iron spike into the planks of the enemy’s deck, and so bound the two vessels together; then the marines, if the vessel was prow to prow, rushed two abreast over the bridge; if alongside, boarded from all parts together. Once the trained soldiers of Rome had gained the deck of a Carthaginian vessel, and there was but little chance for her. The “mere rabble” (as Niebuhr calls them) of an African crew could do nothing to withstand such a foe, for the crew of the Roman quinquereme seems to have consisted of 120 soldiers, in addition to 300 rowers and seamen, a far larger proportion of marines than that employed in the Greek vessels.

THE "RAVEN" (CORVUS).



The result of the first naval engagement proved clearly the sound good sense of Duillius in adopting the new invention proposed to him. Unless he could reduce the conflict to something like land-fighting, there was no chance whatever for him, considering the quality of his ships and his crews as compared with those of the enemy. The "corvus" provided him with the means of using his real strength. The two fleets met at Mylae, the modern Melazzo, not far from the Straits of Messina. The Carthaginians advanced with a fleet of 130 vessels, full of confidence in themselves and contempt for the crews which had learnt to row on dry land, but somewhat puzzled at the masts and long crane-like machines swinging at the bows of the Roman quinqueremes. However, the advanced squadron of 30 ships at once charged, and were almost immediately grappled, and boarded, and taken, including the Admiral's flag-ship. After a short time the remainder of the fleet, finding themselves unable to cope with this novel engine, which robbed them of all the natural fruits of their seamanship and skill, turned and fled, with a loss of about 50 ships, 3,000 killed, and 7,000 prisoners. This victory was the presage of doom to Carthage and the prelude of maritime dominion to Rome. The ram henceforth, though still formidable, had no longer the first place as a weapon of attack. It may be for this reason that in the coin of 216 B.C., of which we have here a drawing, we see it much less projecting, and apparently less strongly supported. Duillius still enjoys well-merited renown, and in the present year has had his name revived in an Italian ironclad. In his lifetime he was even more fortunate. He alone of all Romans was allowed the unprecedented honour of having a piper to play before him whenever he went out to dinner, and torches to light him as he returned.

In the later Roman coins the representation of vessels of war seems to me to evince on the part of the artists a want of interest in naval matters. The types are either grotesque, as in the coin of 91 B.C., or as in the two last instances (one of B.C. 38 and the other of the Emperor Hadrian a century and a half later), indistinct, and fail to convey any instruction as to the build. In fact, if anything, we seem to have reverted back to a type resembling the old Persian type, which I have placed side by side for comparison. We may notice also, that in these later Roman coins we have the sail represented, which is not, so far as I have observed, ever found in the case of a Greek man-of-war. In the eyes of a Greek, the sail was a symbol rather of flight than of fighting.

We have seen how the invention of the "corvus" paralysed the use of the ram. It is interesting to notice how the Athenians, in their distress in the great harbour of Syracuse, where their ramming tactics were rendered useless by the want of space, and by the Corinthian build of bow, at once perceived that boarding tactics were the only alternative left to them by which the victory might possibly be gained. To this end they devised an "iron hand" or grappling iron attached to a chain which was to be thrown on board the enemy's vessels and so make them fast. Against this danger the Syracusans provided, by covering their decks with greased hides, so that the grappling iron

slipped off without gaining a hold. The weight of the corvus as it fell prevented any such device availing against its utility.

Of the other weapons of offence used in naval warfare the most important was the "dolphin," a heavy mass of metal, used for the purpose of sinking an enemy's ship. It was hoisted by means of the yard-arm, which was swung round over the enemy when he came to close quarters. Then the weight was suddenly let fall upon his deck, which it was sufficient to penetrate, even if it did not break right through the bottom of the ship and sink her. We hear also of great beams that swinging from the masts were used as rams against the side, or slung so as to sweep the decks of the foe.

The graphic account given by Caesar of the fight of his fleet with the Veneti, on the coast of Gaul, introduces us to the Falces, great spars with curved steel heads like a reaper's sickle, with which the cordage of the barbarians was cut, and their vessels which were too unwieldy for rowing thus rendered helpless. In later days we have also the counterpart of modern artillery, the Siphons, from which the terrible Greek fire was launched, rocket fashion, against the enemy. Some of these seem to have been of a very large calibre, others, again, small enough to be carried by a single man.

The sketch will not be complete unless we mention the Turres, towers, the "alta propugnacula" of Horace, erected at the bow and stern, and sometimes, if we are to credit the representations on the Column of Trajan, amidships. These were much in vogue among the Romans, to whose tactics they were subservient, giving a vantage height from which the heavy pilum or javelin could be thrown down upon the enemy's deck. Agrippa is credited by Servius with an invention by which these towers could be run up suddenly on coming into action, and were so adapted for the purpose of taking the enemy by surprise.

We may at this point quit the consideration of the armament of the ancient man-of-war and pass to the subject of tactics, properly so called. And first, with regard to the handling of a single vessel, much in old time, as now, depended on readiness and fertility of resource in the officers, and especially in the trierarch, or captain. The skill of the helmsman, the inspiring voice of the kelenstes, the alertness of the stoicharchs, or captains of the banks of oars, were scarcely less important; but above all, upon the training and condition of the oarsmen, upon the efficiency of the motive power of the vessel, depended the chances of victory in single combat. It was in the perpetual training and hardening, under circumstances in which real danger supplied the motive for energetic action, that the free crews of Athens and her allies attained to that excellence which secured to her the sovereignty of the *Ægean* for so many years. It was the want of training and the refusal to endure hardships that caused the Ionians to be disastrously defeated by the Persians at the battle of Lade, and delayed their chances of freedom for fourteen years. The story of Dionysius the Phocæan is interesting and instructive. There, off the shore of the island of Lade, now a hill in the flat marshy plain of the *Mæander*, in the year 494 B.C., four years before Marathon, was drawn up the combined fleet of the Ionians then in revolt against the great king. They

covered Miletus, their base of operations, and lay facing the north. The Milesians, with 80 ships, held the right wing, the place of honour, and next to them the Chians with 100 ships, each with 40 picked marines on board. Next were the Lesbians, with 70, then 43 from the various isles, and last the Samians with 60 on the left. Among the 43 were 3 from Phocæa with Dionysius in command, an energetic and able man. In the council his voice was heard telling some home truths, that without practice they could not be perfect, and that with a fleet of 353 sail as against 600 of the enemy, they wanted all the perfection to which they could attain. His advice prevailed. He was placed in command of the combined fleet. Each day he led them out in column, in order to practice the rowers in manœuvring for some hours, and for the rest of the day he kept the vessels at anchor, and would not allow the crews to land. This last measure, we may here notice, was a most salutary precaution when the enemy were anywhere near at hand, as the crews, when the vessels were drawn up, were wont to stray away and so to render a sudden embarkation a scene of the utmost confusion. The neglect of this precaution was the cause of the utter destruction by Lysander of the Athenian fleet at Ægospotami, of the final blow that laid the hopes of Athens in the dust. The Ionians, however, were made of softer material than their Athenian kinsmen. For seven days they endured the discipline of Dionysius, but then complaints of fatigue and sickness became rife, and the insubordination reached such a pitch that the Admiral was deposed from his command, and the crews had their own way and remained on shore. But a few days afterwards the Persian fleet of 600 sail appeared. The natural result followed. Divided counsels had fostered treachery. They hurried out in column line ahead, and had just time to form up abreast, when the Samians, all but ten, hoisted their sails and left the line. The rest, with the exception of the Chians, who fought bravely, and a few others, among whom was the brave Dionysius, followed their example. Had they persevered in their training, the events of a few years afterwards showed that, although outnumbered, they might have been quite a match for the seamen of the East.

Xenophon, in his short treatise on the Athenian Republic, tells us that the seafaring habits of the Athenians were such that every one knew how to handle an oar, and that the crew of a trireme could be got together with ease at once. In his *Hellenics* (Book VI), he gives a graphic account of the stern training to which the crews were subjected by Iphicrates, the Athenian Admiral, with a view to getting them into condition, and so increasing the speed of his ships. He left, he tells us, all his mainsails at home, and setting the smaller sails (*ἀκάρεια*) very seldom, used the oar for the entire voyage. Whenever the fleet was nearing the place selected for disembarkation for breakfast or dinner, his custom was to put out further to sea. At a given signal the whole fleet came about and the vessels raced to shore. The crews of those that arrived first had choice of ground and water, and were able to get their meals in comfort, while the laggards fared but ill. By such devices and by constantly practising the formation of different orders of sailing while on

his way, he brought his crews to a high state of efficiency without losing time (which was important) in his voyage to Corcyra. His diligence and forethought, which are warmly praised by Xenophon, were rewarded by success.

The skill of the captain of each vessel in the manœuvres of an ancient fleet must have been taxed in no ordinary degree. The number of vessels generally sailing in company rendered the danger of collision considerable. Attention to signals from the admiral's flagship was constantly required. The captain was responsible for everything that occurred in connection with his vessel, and the story of the unfortunate Seylax, who was lashed to a porthole, with his head outside and his body inside his vessel, shows that punishment was sometimes summary as well as severe.

The exploit of Artemisia, the famous Halicarnassian Queen, at Salamis, is a type of the ready daring in handling a vessel which the Greeks so greatly admired. Hotly pursued out of the rout of Salamis by an Attic ship, with friends in front of her and enemies behind, she had the unscrupulous cleverness to run down a Calyndian vessel belonging to the King's fleet, which sank with all hands. The Athenian thinking, when he saw the exploit, that he was pursuing one of his own side, gave up the chase. Xerxes, who witnessed the same, gave her credit for sinking an enemy's ship, and exclaimed that "the men in his fleet had become women and the women men."

More legitimate was the clever manœuvre of Phormion's captain off Naupactus. The last of the eleven ships that had escaped in the flight from vastly superior forces, he was hotly pressed by a Leucadian vessel. Seeing, as he approached the roadstead, a merchantman lying at anchor some way out, he made straight for her, and turning sharply behind and round her, rammed the Leucadian just as she came up, and sank her, and by this daring exploit, not only saved the remnants of the Attic squadron, but struck the Lacedæmonians with such fear that they stopped rowing, and were ignominiously defeated by a force only half their number.

A captain's readiness required to be well seconded by his officers, and especially by the κυβερνήτης, or helmsman, who, next to the captain, was the most important person in the ship. The κυβερνήτης was responsible for the navigation of the vessel. He was the navigating lieutenant as well as steersman. It was requisite that he should be weatherwise as well as waterwise, if one may coin such a word. The advice of the κυβερνήται seems to have been constantly asked by the admirals in command. We have instances when it was taken and proved of the greatest use, as in the case of Ariston, at Syracuse, who bade the admirals have food brought down to the shore for the crews at noon, so that they might get their dinners and then embark suddenly and attack the Athenians, who had returned to their naval camp thinking that work was over for the day. On the other hand, it would have been well for the brave Callicratidas, if he had listened to the advice of Hermon, the Megarian, his κυβερνήτης, who realised the value of the odds at Arginusæ, instead of making the gallant rejoinder "that Sparta would be no great loser if he died, but that it was base to

"run away." It was not his personal safety or reputation, but the proper use of the fleet under his command that was the true issue upon which his judgment should have been exercised. The neglect of the advice of experienced κυβερνήται was, on another occasion, even more severely punished, when the Romans, in all the confidence of the victory of Mylae, had begun to fancy that Italia ruled the waves, and Marcus Æmilius and Servius Fulvius in the year 255 B.C., took the sea with a magnificent fleet of 364 vessels, defeated the Carthaginians, and rescued the remains of the ill-fated Army of Regulus. Then, returning triumphant in the autumn, in defiance of the repeated expostulations of the κυβερνήται they persisted in sailing, though Orion was already showing his great shoulder above the wave, along the southern coast of Sicily. The storm fell upon them, and of the whole fleet, but 80 hulls survived the greatest naval disaster, that the world has ever seen, when 106,500 men and 151,656 tons measurement of shipping were at one and the same time sacrificed to blind presumption and proud ignorance.

Of the tactics of a single vessel in action, when the ram was the chief weapon of offence, it is necessary to notice, first, the ἐμβολή or impact on the enemy's side or quarter, to effect which skilfully and quickly, was regarded as the acme of success; next, the προσβολή, or direct attack, stem on, which was thought unseamanlike by the Athenians, but adopted, without hesitation, by the Corinthians. It was also of great importance that a crew should be able to back water (ἀνακροῖεν) with strength and in time. The diagrams, which face page 535 of the volume of the Journal of this Institution for the year 1874, of some experiments carried on at Cronstadt, by the Russians, with steam launches, might be taken, *mutatis mutandis*, as fairly representing the kind of war-dance that two ancient triremes would execute around each other in a prolonged effort to ram and not be rammed. We do not often hear of vessels of the same rate sweeping away each others banks of oars, for this reason, I suppose, that the projecting parodus, as shown in the model, afforded a protection to them, owing to the angle at which they were worked.

We have seen with what rapidity an ancient fleet was constructed, in the case of the Romans, in the first Punic war. The Greeks, however, appear to have taken longer to build their vessels, the construction as well as the repair of which was costly. Upon this point we have ample details, as regards Athens, but time forbids us to enter upon it here.

At the end of my last lecture, I ventured to describe the fitting-out and departure of the fleet of triremes that carried the Athenian expedition to Syracuse. No mention was then made of the various smaller craft that accompanied the movements of an ancient fleet. But, besides the line-of-battle ships, as we may call them, there were many lighter vessels used as despatch boats, as tenders to the flag-ship, as pilot and look-out vessels. Such vessels did not keep out of action when the fleet engaged, but were used to hamper the enemy's oars by running under his counter, sometimes even to ram him when already engaged, or to divert his attention in various ways. And when the

size of the men-of-war had been so greatly increased that failures in their motive power were more frequent, and more disastrous when they occurred, the use of the smaller vessels was more and more fully recognized, till, at the battle of Actium, the light Liburnians bore away the palm, and the "tall bulwarks of ships" became a thing of the past to the ancient world.

Foremost in dignity, and generally in size and speed, was the Admiral's flag-ship, known by its pennant or badge (*πάρασημον*). It carried the *ναύαρχος* or Admiral. His second in command was called *ἐπιστολείς*. From the admiral's flag-ship the signals were given and probably repeated by all the ships of the fleet. These seem to have been generally made by flags, the red *sagum* or cloak with the Romans being hoisted as a signal for action. What the principle of their signal-code was we cannot now discover, but it must have been sufficiently elaborate, to judge by the indications that we have remaining.

It is interesting to notice that the raising of a shield appears, upon two or three occasions, to have been employed as a signal, suggestive of the question whether the flashing of reflected rays may not have been employed thus early as a means of communication. The Alcmaeonidae were accused of having, in this way, signalled to the Persians after Marathon. It was thus that Lysander turned the course of his fleet for Ægospotami. It was by lifting up a golden shield that Demetrius Poliorcetes gave the order to join battle. We have also an elaborate code of fire-signals, given by Polybius, for use on land, by the employment of which any word could be spelt out.

An ancient fleet as a rule did not go far from land, and generally the crews went on shore for meals, and for the night. The vessels were moored stern to the shore, or drawn up, according as the coast permitted. Herodotus, speaking of the Persian fleet which conveyed Datis and Artaphernes to Marathon, naively remarks that they did not follow the usual *straight* course along the shore round by the Hellespont, but came across the Ægean.

In many instances, very frequently in the Peloponnesian war, the fleets were accompanied by land forces marching along the shore, and often when the vessels were driven ashore, the soldiers came down to the water's edge to rescue a friend or complete an enemy's disaster. Who that has read it, can ever forget the graphic picture drawn by Thucydides of the actions at Pylos, when, by a wonderful inversion of the natural order of things, Lacedæmonians were fighting from the sea, which was not their element, against Athenians on Laconian land, and, when a few days later, after the defeat of the Lacedæmonian fleet in the bay, the land forces of the Lacedæmonians engaged in a naval action from the land, while the Athenians were land-fighting, as he calls it, from their ships? Not less stirring is the account of the gallant rescue of part of Phormion's fleet by the devoted Messenians of Naupactus, whose love for their deliverers the Athenians, was increased and quickened by their fierce hatred of their former masters.

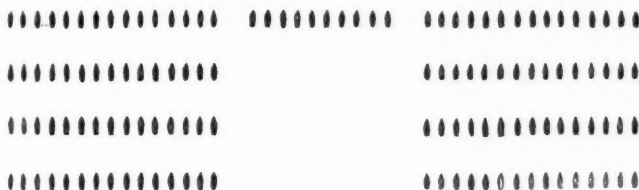
In preparing for action, the chief object was to lighten the vessel as much as possible. Hence the great sails and masts

were put on shore, and everything that could be spared as not wanted for immediate use. This practice necessitated the formation of naval camps as immediate bases of operation. A surprise and seizure of such depôts was frequently the object of a victorious, or even of part of a defeated fleet. Thus, during the battle of Sybota, the Corcyraean left wing defeats the Corinthian right, pursues it, and burns the camp of the latter, while, all the while, their own centre and right were being disastrously defeated. Similarly, after the battle of Ægospotami, Conon, escaping with nine ships, lands at the headland of Lampsacus, and carries off all the mainsails of the victorious Lysander. The practice of fighting near the land was not unattended with danger. Proximity to the shore not unfrequently damaged the Peloponnesian fleets, the crews of which were more happy on *terra firma* than on the less stable element, and were thus apt to begin backing when they should have been advancing. The Athenians, as we have seen, preferred more open water; and the description of Phormion's manœuvres, by which he wished to draw the Lacedæmonian Admiral outside the Straits of Rhium, at the mouth of the Corinthian Gulf, is well known to the readers of Thucydides or Grote.

The orders of battle adopted by the ancient fleets were, in the earlier times, extremely simple. The fleet sailed generally in a column or columns of divisions line ahead (*ἐπὶ κέρας*). When the enemy was sighted, these moved into column line abreast, generally in single line (*τάξις* or *παράταξις*). Fleets composed of an extraordinary number of vessels were drawn up in several lines abreast; that of Xerxes at Salamis, for instance, in six. The crescent formation was not unusual in the case of a superior force, or one that had its wings protected by the coast. The centre thus refused, the wings could close in and envelope the enemy. It was in this formation that the Persians sailed to their first defeat at Artemisium. And in the same, the Lacedæmonian Cnemus, tried, off the Achæan Panormus, to draw into action the wary Phormion. The circle was also occasionally adopted, as by the Greeks at Artemisium on the occasion above mentioned, when, though cooped up in a small space, and face to face at close quarters with the foe, on the second signal they fell bravely to work, and before nightfall had taken thirty of the enemy's ships. The circular formation, however, proved disastrous to the Corinthian fleet, when, fearing the swift Athenian tactics, they adopted it at the mouth of the Corinthian Gulf, thinking that by showing a front of sharp prows on every side, with their five best galleys in the centre ready to help in any quarter that might be pressed, they would be impregnable. They had not yet altered their build, or the result might perhaps have been different. As it happened, that excellent seaman Phormion, the Cochrane of Athens, when he saw their formation, at once concluded that they could not remain firm like infantry on land, which was what they seemed to think possible, but that after a little, their ships would come into collision one with another, especially if the breeze, as was usual in the morning, should spring up and blow from the Gulf. He, therefore, gave orders not to

attack, but kept his fleet in single line ahead, moving round and round, ever closer and closer, till he saw them in confusion. The breeze sprang up with a roughish swell from the eastward, and the circle was already in trouble, the oars interlaced, the crews shouting, and all order lost. The moment had arrived, the signal was given, and the Athenians attacked. The Corinthian Admiral's ship was sunk at the first onset, the others showed no fight. A few escaped to Patræ and Dymæ, the rest were crippled or taken in pursuit.

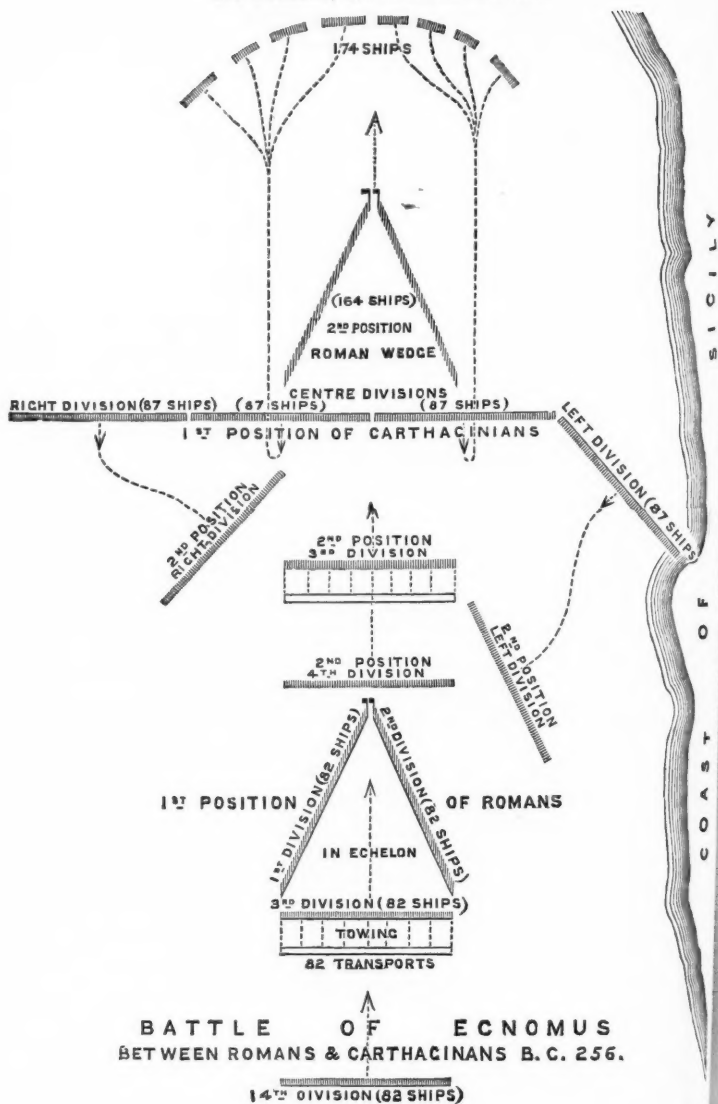
We have in Xenophon a minute account of another formation adopted by the Athenians at the battle of Arginusæ, which he calls ἐπὶ φάλαγγος, which we may describe as two columns of divisions in four lines abreast, each consisting of fifteen ships, with an interval between the first lines of the two divisions filled by ten ships in single line abreast. It was in this formation that the Athenians met the brave Callicratidas, who attacked in single column line abreast.



Athenian Order of Battle at Arginusæ.

One other formation remains to be mentioned, as adopted by the Romans in the battle of Ecnomus, near Heraclea, in Sicily, which may be called the wedge (Cuneus). It is described by Polybius in his first book. The Roman Admirals Marcus Atilius Regulus and Lucius Manlius sailed parallel to each other in two Hexeres six-banked galleys. Their fleet followed in four divisions, arranged in the following order:—The first and second divisions in rear of the two flag-ships in single column line ahead, but so disposed that each ship was in *echelon* outwards from the front, thus forming two sides of a triangle, the base of which was filled up by the third division in column line abreast towing the transports, and in rear of this, the fourth division in a similar formation for their protection. They thus hoped to present an unbroken front to the Carthaginians, their superiors in speed and in power of manœuvring. The Carthaginian Hamilcar, to oppose them, having divided his fleet likewise into four divisions, drew up three of these in line abreast at right angles to the course of the Roman fleet. The fourth he disposed *en potence* on his left towards the land. His object was not only to enclose the wedge, but if possible to draw the two first divisions of the Roman fleet away from the other two, which were hampered with the transports. To effect this, the Carthaginian centre, as soon as the enemy approached, turned in pretended flight and was hotly pursued by the Romans. As soon as Hamilcar judged that the two sides of the wedge were drawn sufficiently far away from its base, at a given signal, the Carthaginians turned fiercely on their pursuers.

2ND POSITION, CARTHAGINIAN CENTRE.



They found, however, that the wedge formation was still unbroken in pursuit, so far as the two sides were concerned, and that it was, as the Roman Admirals had judged, admirably suited for defence, each vessel facing outward with her next neighbour, ready to assist her if rammed or in any other trouble. Still, if Hamilcar's orders had been obeyed by the commanders of his first and fourth divisions, and these had turned upon the open rear of the Roman wedge now separated from its base, the victory was assured. These, however, seeing the third and fourth divisions with the transports, and thinking to have an easy victory, engaged with them respectively. Thus three naval actions were going on at one time, in which not less than 680 ships-of-war were taking part. In the end, the Romans were victorious, the terrible "corvus" showing itself still, as before, superior to the ram. The Carthaginian defeat has its lessons for commanders of divisions or detached squadrons, and its moral is, "Obey orders." The wedge formation in *echelon* has something in common with the *peloton* formation of modern days.

Such were the various orders of battle, so far as I have been able to discover them, but these by themselves do not exhaust the subject of the tactics of a fleet. For the purpose of attack with the ram two manœuvres were commonly employed, named respectively *dieplus* and *periplus*. In the *dieplus*, which accurately rendered, means "the sailing out through," the vessels of the attacking fleet passed through the intervals of an enemy's line, doing what damage was possible by sweeping off oars, and by a fire of missiles *en passant*, and then turning with all speed sought to ram the enemy before he could come completely about. In the *periplus*, a portion of the attacking fleet sheered out of line, and sought to wheel in succession on to the flank of the foe. But for this manœuvre open water was necessary. In a land-locked bay or harbour, such as that of Syracuse, it could not be employed. Against the *dieplus*, the practice of sailing in double or triple, or even quadruple lines, was employed, but there was great danger in such formation unless the crews were most perfectly trained, first, because the increase of depth naturally contracted the front, and so laid the fleet open to flank-attacks; and secondly and chiefly, because, as happened to the Persians at Salamis, the second line was apt to encroach upon the first, and the third upon the second, and the difficulty was increased tenfold if the leading line retired in disorder on the second while it was advancing. In fact, for the success of any such combination, the most perfect discipline and silence on the part of the crew was absolutely necessary. The history of the changes in ancient naval tactics is sufficiently well defined. It would not be difficult to trace their development and decline from Dionysius the Phocæan to Vipsanius Agrippa, from Lade to Actium. But time fails us, and I would fain ere I conclude speak briefly of the causes which contributed to the decline of the ancient marine.

To ourselves, who are familiar with the all-potent steam, slave of the wheel or the screw, it might at first sight seem immaterial whether the crews, which were the motive power of the ancient man-of-war, were bond or free, so long as they had the requisite strength

and training. But as with the Venetians in later days, so with the ancients, the employment of slave labour at the oar tended both directly and indirectly to impair the efficiency of the naval service. There were, however, many causes that led to the practice of employing forced labour. First, the absolute discomfort of the crew in a Cataphract ship must have been extreme. In a hot climate, with but very little ventilation, it must have been exceedingly trying to take part in a laborious mechanical toil with perhaps some hundred or two of human beings stark naked, and packed so closely that there was not room, as Cicero says, for even *one* man more. The heat, the smells, the toil, must have been terrible; to any one undergoing it against his will so terrible as to suggest that even death itself were better than such drudgery. A dull dead feeling of despair must have crept over many a crew in such a case, and though the lash might keep them going under ordinary circumstances, such spirits could not be relied upon in times of emergency.

In proportion as the size of the vessel was enlarged, so the number of the crew was increased, and we have seen that it is probable that in the larger vessels, the ordinary space allowed per man for the rowers was reduced from 8 to 7 square feet. The conditions of the service were therefore rendered worse and not better by the advance in naval architecture.

Besides the question of discomfort, the actual danger was very great. The crews were liable at any moment to be drowned or burnt, or in the case of defeat, butchered by the victors, perhaps, as at Sybota, deliberately in cold blood. Conceive the moment of conflict and its horrors, when the sharp-pointed beak came crashing through the timbers, smashing them right and left along with the helpless mass of human beings, while the water followed swift upon the blow, perhaps just giving time to the Thranites to swarm up upon the deck, while the helpless Thalamites were drowned at once.

It is not to be wondered at that such a service should become unpopular, and that in the deficiency of free labour, which became all the more costly as the conditions under which it was to be employed became less inviting, recourse should have been had to slaves. Hence, perhaps the glory of the trireme has been greater than that of the larger vessels that superseded it, for the great feats which it performed were wrought by the hands of free men fighting for their country or its allies, or else voluntarily giving their services for pay. At the time of the Peloponnesian war the pay of an ordinary oarsman, I may mention here, was three obols a day, increased towards the end of the war to four obols, or a little more than sixpence of our money. The pay of the Thranites was higher, their services being valued at a drachm, or about ninepence per diem. Raising the pay of seamen was a favourite expedient during hostilities, with a view to crippling the resources of the enemy, by inducing his crews to desert, a practice not without its parallel in modern times. For no purpose was Persian gold more greedily sought after, except perhaps for bribing the chiefs themselves.

The Romans manned their fleets by levies from the lowest orders,

and by forced service of their allies. Still, the greater proportion of the labour employed by them was that of slaves, contributed by free men as substitutes, and it is this fact which perhaps explains the equanimity with which they endured the huge waste of human life which their fleets involved. Hence among the Romans the service on board ship was most unpopular, and we are not surprised to find in the pages of Tacitus the discontent of the *Classarii* recorded, who wished to be transferred to a more honourable calling "in spem honoratoris militiæ." They felt they were despised by their brethren of the legions, and wished to quit a service which herded them with slaves and offered them danger without hope of distinction. Such were some of the influences which led to the decay of the ancient navies, and at the same time to the obscurity in which the details concerning them are involved. As a rule, the historians (who take endless pains in minutely narrating military operations, for I must except Polybius and Caesar) pass over naval affairs with but slight notice, or at the best give slight sketches of such matters in general terms.

It remains for us to institute a short comparison between ancient and modern fleets as regards their tonnage and manning. In this I rely upon the calculations of Graser, for I have not yet had time to work them out for myself. He compares the Attic fleet of the year 330 B.C. with the Russian fleet in the Crimea in the year 1854. The tonnage of this he gives at 72,000 tons; the Attic fleet, consisting of 411 vessels, he computes at 98,085 tons. During the next five years the Attic fleet had been increased to 103,577 tons measurement. The present tonnage of the British navy is, I believe, about 300,000 tons, of the French about 200,000 tons in round numbers. The fleet of Xerxes, which we are assured on good authority consisted of 1,207 triremes, must have had, upon Graser's basis, 280,627 tons measurement. The great fleet of the Romans at Ecnomus, consisting of 364 quinqueremes, represents shipping to the extent of 193,376 tons. These numbers may not be exactly accurate, but they assist us to realise the vast scale upon which these ancient navies were constructed, and forbid us to underrate them.

The multitude of men employed exceeds by far that of modern times. The crews of Xerxes' fleet all told, are estimated at upwards of 340,000 men. The Attic navy of the time of Demosthenes required upwards of 90,000 men for its service. The Roman fleets in the first Punic war carried in some instances nearly 120,000 men.

The thought of the employment of these vast forces can hardly fail to bring home to us the awful conditions of ancient naval service. What a terrible sight must have been that storm to which I have already alluded, when the coast of Sicily for miles was strewn with the bodies of the dead and with the fragments of the perished fleet! What a spectacle, again, must have been that great Battle of Ecnomus, when from the Sicilian coast might have been seen those two great fleets, the mighty Roman wedge and the long bent line of the Carthaginians, approaching each other for a struggle to the death. No wreaths of smoke obscured the prospect: the fight with all its pitiless carnage was open to view, and far, we may believe it, over that quiet summer-sea

re-echoed the thundering crash of the ram, the heavy rattling fall of the corvus, the shouts of fury, and the shrieks of pain.

Come with me now, in thought, for a few minutes more. Let us stand, in spirit, upon the beach of the great harbour of Syracuse, and see the fate of that great fleet, the departure of which, amidst all the enthusiasm of popular exultation, we witnessed but a short time ago. The scene is now far different. There is no gladness, but sadness everywhere. The reinforcements have come, but the fleet reinforced has been beaten. Athens no longer can claim supremacy on the sea. Her tactics are useless in this close land-locked bay. Worse still, the very mouth of the bay is closed by the enemy; there is no escape. Only a narrow strip of shore, where the naval camp is standing, can be called our own; the rest is in the hands of the enemy.

"Truly we came to beleaguer yon city, whose circle of walls is still unbroken, but are now ourselves beleagured—besieged rather than besiegers. The months have been months of misadventure and mistake, and of labour in vain. All has deteriorated, men and material alike—our ships are heavy, their timbers are sodden—our hearts are heavy, and our strength is failing. One more desperate attempt must be made. We must change our tactics. Grappling-irons must be used, archers and slingers must crowd our decks. Our old seamanship is gone; our pride, it is now of no avail. Here come the chiefs—not Lamachus. No; he is at rest up yonder, on the hill. He sleeps in a soldier's, not a sailor's grave. No! nor Alcibiades. Where is he? Who knows? Perhaps at Sparta, plotting against his country; perhaps in Asia, intriguing with the Persian. Why did they not try him before we started? His youth and cleverness might have been of good service ere now to us. But he is gone; he is a traitor; why talk more about him? Nicias is here, the only one of the original three, and the good omen clean taken out of his name. How pale and wasted he looks, scarce dragging his limbs along for pain. Verily, if the Athenians had taken his advice, and recalled him, they would have done well. And with him is Demosthenes, a famous captain, the best of our time. Why send him out too late? Why send him out at all, unless with full powers to do what his experience dictates? As it is, he is crippled by Nicias, well meaning man, with his superstitions, and false hopes, and dangerous intercourse with Syracusan traitors, who make him their dupe." Such are the murmurings that we overhear, but now the necessity for action silences complaints. The ships are manned, the chiefs address their captains, the captains their crews. They speak with all encouragement; they tell them of home and country to be seen once more, if they win the day; they tell them of the honour of Athens to be maintained. Let us stand aside and see the battle. The fleets are nearing each other. Part of the Athenians are detached to break the barriers that close the harbour mouth. With that the action commences—a fight unparalleled, where, in a narrow space, less than a mile broad, 200 vessels are crowded together in mortal conflict. At first, the Athenians almost succeed in loosing the barrier, but the

Syracusan detachment there is reinforced, and the fight becomes general over the whole harbour. The struggle is long and intense, crews and helmsmen and troops alike vying with each other in doing their best. The land forces of either side, drawn up on the shore, are in agonies, at one time shouting for joy, at another time groaning with despair, as they witness the victory or defeat of their friends: swaying their bodies to and fro in frantic excitement, following, by gesticulations, the movements of the combatants. At last the fatal moment comes. The Athenians can hold out no longer; they turn and fly towards their camp, pursued brilliantly by the Syracusans, with shouts of triumph. The two great hulks, with the dolphins suspended over the entrance to their naval stockade, protect some of their ships—the rest are run on shore. All is now over. Demosthenes would fain, with picked crews, make one more attempt to break out, but the men are cowed, their spirit is broken, and they refuse to go on board. Nothing remains but a retreat by land, and so, on the third day, leaving the dead unburied and the wounded uncared for, burning some ships, and leaving the rest to fall into the enemy's hands, the remnants of the Athenian force, numbering still 40,000 men, start on their hopeless march, to end in death or slavery.

Sad is the story of broken pride and humbled ambition, but its lessons are wholesome and instructive, and the conduct of Athens, in her humiliation, still unyielding, still courageous, sheds a lustre on the dark days of her calamity. Truly, in virtue of this noble spirit, she had a brighter life in store for her in after time, brighter than that which the selfishness of commercial Carthage either deserved or obtained.

LECTURE.

Friday, May 19, 1876.

GENERAL SIR WILLIAM CODRINGTON, G.C.B., Vice-President,
in the Chair.

THE CONVENTION OF GENEVA, AND NATIONAL SOCIETIES FOR AID TO SICK AND WOUNDED SOLDIERS IN WAR.

By JOHN FURLEY, Esq.

MORE than once I have been requested to address a public audience on the subject chosen for to-day; but I have hitherto declined to do so, feeling that it might be considered presumptuous in me to offer suggestions on a matter which is more particularly within the province of members of the military and medical professions, or more properly still, perhaps, of persons possessing a combination of qualities which belong to both. But I have waited in vain for somebody more fitted than myself to undertake this duty, and I now ask for every indulgence, whilst I endeavour in the brief time allowed me to draw attention to the Convention of Geneva, as well as to what the National Societies for Aid to Sick and Wounded Soldiers in War have already accomplished, and what will be expected of them in the event of another war.

Although anxious to avoid obtruding my own individuality as little as possible, I shall not be misunderstood when I say, that nothing but my own personal experience on the subject I am about to discuss, gives me any right to appear here to day. This experience dates from the Schleswig-Holstein war in 1864, when I first learnt to appreciate the value of volunteer assistance in military hospitals; and it was greatly extended during the Franco-German war. Subsequently, I was attached to the Army of Marshal MacMahon during the war of the Commune; and more recently I have served with Spanish ambulances both in the Army of the Government of Madrid, and in that of Don Carlos.

And here let me anticipate any expression of opinion that Red Cross Societies ought to hold aloof from civil war and rebellion. It is undoubtedly right that the national societies of countries not immediately affected by a civil war should abstain from any active in-

terference in it: but it is quite otherwise with those principally concerned, as the French Société de Secours aux blessés militaires during the Commune, and the Spanish Society in the Carlist war; especially when, as in the former, the insurgents were practically acknowledged as belligerents by M. Thiers, and in the latter when the Alphonists and Carlists mutually treated each other as on an equal footing. No person who was a daily witness of the awful horrors of the Paris Commune, or who has served as an ambulance volunteer on battlefields in the north of Spain will be inclined to assert that wounded Communists and Carlists had no right to any sympathy. Humanity protests against such a conclusion. To their honour be it recorded that some of the most prominent members of the French Société de Secours remained at their posts in Paris throughout the whole period of the Commune, and relieved the sufferings of hundreds of Communists, whilst their colleagues were at Versailles, engaged in the same manner amongst the soldiers of the Government and the wounded prisoners who fell into their hands. And so with regard to Spain, the Red Cross Society of Madrid and the members of the *Caridad* (a Carlist society, of which the Doña Margarita was the President) made no difference between friends and foes.

It is quite unnecessary to recapitulate the history of the Convention of Geneva. An attempt to do so would almost involve a history of war itself. It had long been acknowledged that no Army ever possessed medical and sanitary means equal to the exigencies of a great campaign; and this feeling culminated in the splendid voluntary efforts which were made to relieve the sick and wounded soldiers during the Crimean war, and in the war between the Northern and Southern States of America. Notwithstanding the universal conviction as to the insufficiency of all official means for carrying off wounded men from the field, applying temporary relief and subsequent attendance in the hospitals, no attempt was made to obtain the opinion of the civilized nations of the world as to the best manner in which to meet this great want, until the year 1863, when the first Conference was held at Geneva. From this meeting emanated the Convention which was adopted on the 22nd August in the following year.

But even were it necessary to remind my audience of the various circumstances which gradually led to the Congress at Geneva, when that Convention was framed which less than a year afterwards was accepted by nearly all the States of Europe, I should have good reason for hesitating to do so.

In 1866, from the place I have now the honour to occupy, Deputy Inspector-General Longmore, C.B., Professor of Military Surgery at the Army Medical School, at Netley, described, in language and with an authority to which I cannot pretend, the development of that idea which found expression at the International Conferences held at Geneva in 1863 and 1864.¹ At Berlin, Paris, Vienna, and elsewhere, during the last ten years, I have assisted at the official meetings at which the Convention has been discussed, modified, and extended; and I am glad to have this occasion to bear testimony in presence of my

¹ See *Journal of the Institution*, vol. x, p. 162, *et seq.*

own countrymen to the important influence which Mr. Longmore has exercised upon the deliberations of those who have borne forward and marched under the Red Cross Flag. I can personally testify to the fact that there is not in Europe an army hospital establishment, or a society for the relief of sick and wounded soldiers in which the valuable assistance rendered by Professor Longmore is not acknowledged; and there is not one in which his professional brethren and all those who, like myself, have had the honour to be associated with him, do not admit he is one of the very few representatives of different nationalities who thoroughly understand the Convention of Geneva in all its bearings, both civil and military, and under whose cautious guidance the humanitarian theories which were advocated at Geneva, have become accomplished facts. I am quite aware that this mention of his name would not be in harmony with the characteristic modesty which so distinguishes the gentleman of whom I am speaking; but as one of the rank and file of the Red Cross army, I could not forego this opportunity of paying a humble tribute to one of the worthiest, most conscientious, and most honourable of our chiefs.

Has the Convention of Geneva succeeded in accomplishing that which its promoters expected of it? It may be unhesitatingly affirmed that it has done so. In some respects, perhaps, it has partially failed in its objects, whilst in others, those who without authority, have adopted it, have gone far beyond the limits which this international agreement was intended to define: but on the whole the opinion of the civilized world has prevailed, hundreds of lives have been saved, and comfort and consolation have been brought to wounded and dying men by the intervention, not only of accredited volunteers, but of irregular helpers, who have boldly taken possession of an agreement that was never designed to give them the benefits of neutrality in war, however benevolent their intentions might be.

The good effects of the first Conference held at Geneva were immediately made evident in the Schleswig-Holstein campaign. In February, 1864, nearly six months before the King of Prussia signed the Convention, a society was formed at Berlin, and an appeal was made to the nation on behalf of the sick and wounded soldiers. This undoubtedly contributed to the success of the second Congress held in the same year.

The Convention was tried cautiously, and on a comparatively small scale during the short campaign in Bohemia in 1866, but this could not be considered a decisive trial, as Austria had not then signed the Treaty. The Prussian Red Cross Society, however, gave good proof of its labours during the two years that had elapsed since its formation. On the day the battle of Langensalza was fought, in response to a telegram stating that there were 1,500 wounded men lying on the field in want of the simplest necessities, three special trains laden with surgical aid and hospital material, left Berlin at midnight. The work then performed by the Prussian Society was sanctioned by the Government, and its agents in the field were under military control.

But although such societies had been established in several countries,

with the approval of their respective Governments, it was not until the year 1870 that the Red Cross assumed a position that had never been contemplated even by its most sanguine adherents.

At the very commencement of the war, France and Germany were covered with a network of aid committees. This contagious benevolence spread to other countries, which, though remaining at peace, determined to do their share towards the relief of the sufferers in a war that was evident would soon count its victims by thousands. Everybody talked of and worked for the Red Cross. Funds were liberally subscribed; immense depôts of gifts in kind were formed, and rich and poor contributed their pence, their pounds, and the work of their own hands to this novel undertaking, which appealed so irresistibly to the genuine sympathies of all. In a word, one great international impulse seized upon the Convention of Geneva, and gave to its articles the meaning which best satisfied humanity.

It was not only in France and Germany that volunteer societies, for the relief of the victims of the war, entered on the campaign simultaneously with the combatant troops which were marching towards the Rhine. Volunteers from almost every State in Europe which possessed a Red Cross Society, at once enrolled themselves under the new flag, and appealed to their compatriots for material assistance. Belgian, Dutch, and Swiss doctors, nurses, and ambulance helpers immediately appeared on the field, and others soon followed.

When the rival Armies of France and Germany first came into collision, in the month of July, 1870, England had no such Society; but in the first week of August we had one, with a fund which was rapidly assuming large proportions, and a numerous band of volunteers, in presence of whom the only difficulty was one of selection.

The circumstances connected with the establishment of the British National Society for Aid to Sick and Wounded in War, are so well known that it is unnecessary I should trace its origin or describe all that it accomplished in 1870-1. But I may be allowed to recall certain facts, a forgetfulness of which has encouraged the belief that the British Society was formed only for the Franco-German war, and that it will remain in abeyance until another international war shall again call it into a state of activity.

At the first public meeting of the Society, held at Willis's Rooms, on the 4th of August, 1870, it was resolved, "That persons be admitted as Members of the Society on payment of £5 donation, or 5s. annual subscription." At the same meeting the two following resolutions were also adopted:—"That a Central Committee of 21 Members be appointed to assist in carrying out the objects of the Society. That the said Committee be annually elected, by rules similar to those of the National Rifle Association. That Sub-Committees of the Society be established in various parts of the country, and that these Sub-Committees regulate their own subscriptions, manage their own affairs, defray their own expenses, and transmit to the Central Committee such contributions as they are able to collect, and such material as may be suggested from time to time by the Central Committee."

Now, these resolutions were framed with the intention of making

the Society a permanent institution in this country, on the broadest possible basis.

It is not perhaps surprising that, when the war was concluded which had brought the Society into existence, and which had taxed to the utmost the strength and energy of the London Committee and all who had been actively employed as its agents, these resolutions were forgotten, and those who had laboured under the able direction of Lieutenant-Colonel Loyd-Lindsay, V.C., M.P.—whose name will ever be honourably associated with the grand effort which England then made in the cause of humanity—were only too glad to furl their banner and return to those avocations from which they had been drawn.

No one will, I think, venture to predict that wars have for ever ceased, or even, looking towards the eastern horizon, that we have entered upon a long period of peace. Whether in any future war we may be engaged as principals or spectators, the moment it breaks out, attention will naturally turn towards the British National Aid Society, and much will be expected of it. Undoubtedly the call will meet with a generous response; but the same lenient criticism that was accorded to the work in 1870 must not be expected. At the outbreak of the Franco-German war, as I have already remarked, there was no British National Aid Society, but the sympathy of the nation made the formation of one a comparatively easy task. Volunteers, money, and gifts in kind were speedily dispatched to the seat of war. The result was grand, but such an experiment can never be repeated.

I make this assertion advisedly, and after the most careful consideration. What an English society might do in supplementing the work of our military medical establishment, in time of war, and what it will be allowed to do, in the same capacity, for foreign Armies, are two different matters. But they are questions that must be settled, if the Society is to be a permanent and an useful institution.

The Crimean war afforded an example of what English men and women will do for their own soldiers; and British energy and philanthropy will, I trust, always be equal to even greater trials than that was. But the Crimean war brought home to us all two facts of which the promoters of the Convention of Geneva did not fail to make use: namely, that no Army can possess in itself a hospital establishment and sanitary means equal to the emergencies of a sanguinary campaign, and that no satisfactory supplement to it can be extemporized at a moment's notice. All that individual devotion and public generosity could accomplish for our sick and wounded soldiers was witnessed in 1855-6. And if the necessity should unfortunately again arise, this would be repeated. But "*para bellum*" is a good motto, even when applied to military hospitals and Red Cross societies.

What I have just said refers more especially to the relations which have existed, and which may again be created, between volunteer hospital helpers and our own Army. This is the easiest part of the question to which a solution is required. But the Convention of Geneva affords the benefit of reciprocal neutrality to all non-combatants who may be serving in the hospitals of belligerent Armies. Such persons are now distinguished by an armlet, with a red cross on

a white ground, which is generally believed to be given to them under the authority of the Commander-in-Chief of the Army to which they are officially attached, but which, in 1870, were manufactured and distributed in the most indiscriminate manner. I need say no more as to the way in which this Article of the Convention was treated in 1870, only now remarking that, whether it be for our own Army or for that of a foreign State, it is quite impossible properly to comply with this or any other of the provisions of the Convention of Geneva at the outbreak of wars carried on as rapidly as they now are, unless all the preliminary arrangements have been settled in time of peace.

I have already spoken of the general ignorance that prevails as to the Articles of the Geneva Treaty. Fortunately, this was of little consequence during the Franco-German war, and the fullest latitude was allowed to those who were attending to the sick and wounded on the field, and in the numerous hospitals which were scattered over France. An agent of the British Society determined to accomplish his mission could go almost where he pleased, without meeting with any obstacle sufficiently serious to stop him. German sentries or French *franc-tireurs* might cause delays, or a siege might compel him to alter his course; but in other respects his liberty of action was almost complete.

But this freedom must not be entirely attributed to the benevolent consideration which Generals and Commanding Officers are willing to bestow on all persons engaged in hospital work. As was said by the late Dr. Loeffler, Surgeon-General in the Prussian Army, "*la tactique prime la philanthropie*;" and as long as there are wars, so long will humanity suffer from countless concomitant evils. Unless Generals are in a position which permits them to be generous, they must not be expected to bestow much thought on any but combatant followers. Hence it is necessary that every branch of an Army should be an integral part of the whole; and even a volunteer ambulance should be under strictly military discipline, and attached to a division or brigade.

But the Franco-German war, from which the best experience of the working of the Convention of Geneva and the Red Cross Societies can be drawn, was altogether an exceptional campaign, and this not so much on account of its magnitude as by reason of the one-sided character of its principal results. Even the most sanguine anticipations of the conquerors were surpassed by the first engagements, and situations were created which had never been foreseen by the advocates of the Geneva Treaty. The framers of this international agreement had not imagined, that in the event of a war almost all the States of Europe would send delegates to the relief of the victims. There is not a single paragraph in the Convention, or in the Articles which were subsequently added to it, which refers in any way to the presence with belligerent armies of a body of volunteer helpers from neutral States with stores intended for use in field-ambulances and stationary hospitals. The peculiar character of the Franco-German war made the introduction of this novel element comparatively easy; and, looking at the results, it would be hypercritical now to examine too severely

the free and easy manner in which the objects of the subscribers to the various Red Cross Societies were accomplished. One of the belligerents was so completely overmatched by the other, that the latter could afford to allow considerable liberty of action to those who had come with vast stores to aid in relieving the thousands of victims who were scattered over the country from the Rhine to the Loire and the Seine. No doubt the German head-quarter staff would have preferred the *matériel* without the *personnel*;¹ but as these could not be separated, they accepted the arrangement which was imposed upon them, and regarded with considerable indulgence the "eccentricities" of this new feature of modern warfare."

As far as possible complete impartiality was observed by the conquerors in the treatment of the sick and wounded of both armies; but it must be borne in mind that, owing to the course of the war, almost the whole of the neutral assistance was absorbed by the Germans. A separate and exact partition between the belligerents was impracticable after the first few weeks of the campaign, and no share intended exclusively for the French hospitals, with the remarkable exception of the 20,000*l.* carried into Paris by Lieutenant-Colonel Loyd-Lindsay, could reach them, as they were completely blockaded on all sides except towards the south.

The greater part of the share of assistance intended by volunteer societies for France found its objects in the hundreds of wounded prisoners who were left amongst the Germans. Both sides enjoyed the benefit of extraneous aid, and it is impossible to calculate the number of lives saved by this means. But those who were shut up in towns which were besieged could not derive any of the assistance from without. This isolation in some places was of short duration; in Belfort and Strasbourg it was for a longer period, whilst in Metz it lasted rather more than two months, and in Paris for five months.

Nothing better exemplifies the status of volunteer ambulances from neutral States during the Franco-German war than that of the Dutch Society, which was under the direction of M. Van de Velde.

This gentleman, accompanied by four or five surgeons, a secretary, and one or two other persons, arrived at Versailles about the 12th September, 1870. At this time the Red Cross Committee of that town, of which M. Horace Delaroche was president, had established a hospital of 105 beds in one of the numerous wings of the palace. The whole establishment was immediately offered to M. Van de Velde, as it was evident that Versailles was about to become the head-quarters of a German army-corps, and it would be useful to have a hospital there under the protection of citizens of a neutral State. There were then six wounded men and nineteen cases of typhus, all Frenchmen, in the hospital. A few hours later there was fighting in the neighbourhood of Versailles, and M. Van de Velde and some of his staff went out in the direction of the firing. On their return in the afternoon they

¹ Inspecteur-Général Dr. Chenu, at the Conference held at Geneva in 1863, said, in reference to the employment of volunteer hospital assistants, "*L'Amérique seule peut se permettre de telles excentricités.*" Since that time no person has worked more zealously than he has done with volunteers under the Red Cross flag.

found that Versailles had capitulated, and the chief of the Prussian medical staff of the 3rd Army Corps, Dr. Kirchner, had taken possession of the chateau, including the Dutch ambulance, and was then establishing a large German hospital. The twenty-five sick and wounded Frenchmen actually in the chateau were removed to other houses in the town, and the acting *personnel* were requested to obey the new chief. M. Van de Velde contended that this was a violation of the Convention of Geneva; but he was answered by a reference to the explicit instructions laid down for the sanitary service of the Prussian Army; according to which, voluntary aid to the sick and wounded cannot be independent of the Army, but it must be incorporated with the organisation established by the Government, and directed by its Officers in order to avoid any interference with official action.

I repeat that no Article in the Convention of Geneva refers even remotely to the supplies of neutral volunteer societies. However, this was not the belief in 1870, and I can best illustrate some of the difficulties which arose by the following example which occurs to me.

Paris was closely invested. Nothing was allowed to be sent in for the use of the hospitals, and it may be said that nothing was absolutely wanting in them. A convoy of goods intended for the *dépôt* of the English Society at Versailles, and under the command of Mr. Thomas was stopped at Vernon, and only such articles as were evidently for hospital use were allowed to be taken on. Food, and there were many cases of biscuits, was absolutely prohibited. This was indignantly pronounced to be a contravention of the Convention of Geneva. But even supposing it had been so, I think it would not have been surprising if persons who, perhaps, had never even read that document, had regarded such a cargo with suspicion, and had argued that if their enemy prevented anything from entering Paris, they had a perfect right to do their best to blockade the head-quarters of that enemy.

Let me offer another illustration which will still further exemplify my meaning. We all remember what heroic efforts were made, especially by the women of England, for the relief of the sick and wounded soldiers in the Crimea. Red Cross Societies had not then been established; but supposing they had been in existence, is it likely that the English and French besiegers would have allowed hospital supplies to have passed through their lines into Sebastopol, or would their enemy have permitted similar stores to have been sent over Russian territory to the hospitals of the allied armies? I think not, and yet this was the sort of benevolence which in 1870 it was imagined would be tolerated under the Red Cross Flag.

Notice of bombardment is, or should be, always given to the inhabitants of a town before any shots are fired into it, in order to allow time for the departure of non-combatants, and aged and sick persons. But when once a siege has been commenced, in the interests of humanity it is not desirable that this should be prolonged by any sentimental considerations.

Thus far I have endeavoured briefly to call to mind the origin of the Convention of Geneva, and the manner in which the Red Cross

Flag first gained a position on the battle-field. I have also described how this treaty, which was only intended to cover sick and wounded soldiers and the *personnel* and *matériel* of military ambulances and hospitals in time of war, was invoked in 1870 for the protection of independent volunteer helpers and stores from neutral States.

I propose now to devote a short time to these two important questions.

1stly. Can the Convention of Geneva be maintained in its present form, or is it desirable that it should be modified or extended?

2ndly. How can the British National Aid Society be so employed in time of peace as to be in a fit state to supplement the hospital service of the British Army if called upon to do so in time of war?

Now, however much this celebrated Treaty of Geneva may be open to criticism, I do not think that any assembly in the civilized world would vote for its abrogation. The treaty itself is clear and distinct; and almost all the mistakes which have been committed under its *assumed* sanction have arisen from ignorance of its Articles, and the pardonable zeal of persons who have adopted the spirit of that international agreement rather than the letter.

Few persons have read this document; and the vague notions which exist as to the general meaning of the treaty were still further confused by the irregularities which were permitted to "benevolent neutrals" during the Franco-German war.

Whatever may have been suggested before or since the adoption of the Convention of Geneva, the first words of the first Article in it expressly define the limits to which this agreement was intended to be confined. They are as follows:—"Military ambulances and hospitals "shall be acknowledged to be neutral, and, as such, shall be protected "and respected by belligerents, &c." As was said by Professor Longmore in 1867, and repeated by him in this theatre in 1872,¹ "The treaty only comprehended the military ambulances and hospitals of the belligerents, the staff employed in attending the sick "and wounded contained in them, and the materials necessary for "their proper treatment. Its articles did not provide for any "volunteer or independent staff of hospital assistants; and such "persons could only participate in the provisions of the Treaty by "being regularly admitted into the hospital service, and forming for "the time being part of the military establishments of the armies "engaged, and thus becoming subject to the ordinary rules and "articles of war. These latter would then come within the provisions "of the treaty, because then they would be comprised in the *personnel* "of the military hospitals, as laid down in the second article of the "treaty." At the Congress of 1864, it was unanimously determined by the official delegates then present, to exclude from the text of the convention that part of the circular note which had been sent by Switzerland to the Governments of all civilized countries, which suggested the neutralization of voluntary hospital assistants recruited by aid committees, and to confine the neutralization to the official sanitary *personnel* of the hospitals of the belligerents.

¹ See Journal, vol. xvi, p. 206, *et seq.*

Enough has been said to prove the manner in which the agreement was infringed during the Franco-German war. If no personal assistance had been given to the hospitals of the belligerents by the societies of neutral States, there would have been little necessity for any reconsideration of the Treaty of Geneva. This document is sufficiently explicit for all the purposes for which it was intended, namely, the neutralization of military hospitals and ambulances in time of war. But a precedent was set, which, though attended with excellent results from a humanitarian point of view, only escaped introducing a most serious international complication by the force of circumstances, which were exceptionally favourable to the philanthropic experiment which was then made. Such an occasion might be repeated; but I, for one, cannot believe it will arise.

A flood-gate has been opened which can never again be closed; and I feel no hesitation in asserting, that the Convention of Geneva cannot be maintained in its present form, unless the position, in time of war, of the volunteer *personnel* of national societies—other than those of the contending nations—with regard to the hospitals and ambulances of the belligerents be clearly and unequivocally defined.

The second question is: How can the British National Aid Society be so employed in time of peace as to be prepared to supplement the hospital service of the British Army if called upon to do so in time of war?

This proposition is purposely limited to the connection which ought to exist between the Society and the Army, because this should be the paramount object.

I will briefly describe what the Continental Societies have done, and are doing. Their work includes much that does not strictly belong to the province of Red Cross Societies; but a general description of their labours will perhaps lead by inference to a more useful and practical solution for ourselves, than any dogmatic expression of my own could possibly do.

The International Exhibition, held in Paris in 1867, gave an opportunity to France to exhibit the practical side of the humanitarian ideas developed by the Convention of Geneva. On the initiative of Count Sérurier, who was one of the earliest promoters of that Treaty, and who is still one of the most zealous and indefatigable representatives of the Red Cross, a large exhibition of hospital and sanitary material was organized; and, in connection with this, a Conference was held, which was virtually the starting point of the activity which has been displayed by the National Aid Societies of Europe.

The Société de Secours aux Blessés des Armées de Terre et de Mer has made remarkable progress since the war of 1870-1.

Notwithstanding the enormous amount of work which devolved on the members of the Paris Central Committee in that terrible year, they have not once discontinued their labours. What was done by the Society during the Franco-German war can be gathered from the voluminous statistical report of Dr. Chenu, Inspector-General of Ambulances. Immediately after the war, there was the repatriation

of the French wounded, who had been prisoners in Germany; and this was accomplished under the personal direction of Baron Mundy and M. Albert Ellissen. Nor even then did the Central Committee consider that its duties towards the victims of the war were at an end.

Artificial limbs and costly surgical appliances were provided for those who had been mutilated, and pensions were granted to invalids, as well as to widows, orphans, and the aged parents of those who had died in the service of their country. The graves of the dead were also carefully marked, and in some places monuments were erected.

In 1873, an exhibition of hospital and sanitary material was held in Paris, and six diplômes d'honneur, eleven gold, thirty-one silver, and sixty bronze medals were awarded by the Society for the best inventions which could be utilized in hospital work. It was then that the kitchen-waggon was first introduced; and the time will assuredly come when no ambulance column will be considered complete without such a carriage. I may add, that this model, constructed by M. Kelluer, of Paris, is one of the admirable inventions chiefly due to the ingenuity and indomitable energy of Baron Mundy.

But certainly one of the most important steps of the French Society was taken in April, 1874, when a conference of delegates from all the departments in France was held in Paris. Resolutions were then adopted which, whilst recognising the superior control of the Paris Central Committee, allowed each of the Provincial Committees certain freedom of action, and the disposal of its local funds, with the exception of a fixed proportion which is to be sent annually to the Treasurer of the Central Fund.

At this meeting it was also suggested by M. Albert Ellissen that eighteen centres of action should be established corresponding to the head-quarters of each of the Army-Corps, and that eighteen dépôts of hospital material should be formed.

The material of a divisional ambulance is to be composed as follows:—

- One omnibus.
- One large fourgon.
- One small fourgon.
- One kitchen-waggon.
- Five ambulance carriages.
- One carriage for medical and surgical stores.
- One box of surgical instruments.
- Fittings, &c., for the large fourgon.
- Fittings, &c., for the small fourgon.
- 19 furnished hampers for the fourgons.
- 50 stretchers.

The total cost of each divisional ambulance to be 30,000 francs (£1,200).

It was also proposed that a delegate of the Society should be attached to the General commanding each military territorial division.

Many other propositions were made, including one for the formation of a special institution where medical students and nurses should

receive practical instruction on all subjects connected with field-hospital work.

I have thus briefly indicated some of the principal points to which the French Society has devoted its attention since 1871.

I have already alluded to what Germany in general, and Prussia in particular, have done towards the development of volunteer hospital relief in time of war. The interval which elapsed between the Danish war in 1864 and the outbreak of the war in 1870 had been well employed by the Berlin and other German committees; and the experience gained in the seven weeks' war of 1866 was not without value. The Franco-German war was declared on the 17th of July; on the 19th the Central Committee of Berlin made an appeal to the nation; on the 20th it announced that gifts to the Society, whether sent direct to the principal depôts or addressed to the different army corps, would be conveyed free on all the State railroads. At the same time the King of Prussia appointed Prince Pless as Royal Commissioner and Military Inspector of Volunteer Assistance. He was to be the medium between the Aid Societies and the Army in the field; and it is well to call attention to the fact that he alone had the right to distribute the Red Cross brassards, and to give authority to wear them. Under Prince Pless a delegate was attached to the head-quarters of each Army operating in an independent manner; and one was also appointed to every corps of such Army. Besides these were sub-delegates at the different Etapes, and others whom it is unnecessary to specify.

All the principal offices in this volunteer department were held by men of position, who, like Prince Pless, were members of the Order of St. John, or of that of Malta, the former (Johanniter Ritter) being Protestant, and the latter (Malteser Ritter) Roman Catholic.

During the war of 1870-1 there were in Germany 25 principal, 1,956 sectional committees, with more than 250,000 members, all working more or less under the direction of the Berlin Central Committee.

The Central Comité der Deutschen Vereine zur Pflege im Felde verwundeter und erkrankter Krieger differs from the French Central Committee in many respects; but there is one very important point of dissimilarity. The French Society not only devotes itself to sick and wounded soldiers and sailors in war, but, as I have already said, it grants pensions to invalids, and to the widows and children of those who have died in war or from its effects. The German Red Cross Societies do not directly undertake this branch of relief, but they leave it to sister societies, which work in connection with them. Of these the principal is the Kaiser Wilhelm Stiftung, an institution which supplements the pensions given by the State to disabled Officers and soldiers, and their widows and children.

However, it seems that the German Societies now intend to admit within the sphere of their labours in time of peace, such calamities as may be caused by fire, inundation, or epidemics.

Amongst the German Societies auxiliary to that of the Red Cross may be mentioned the Ladies' Societies (Deutscher Frauen Hülf's und Pflege Vereine) of Berlin, Munich, Dresden, Stuttgart, Darmstadt, and Carlsruhe. In consideration of the services rendered by these, in

the training of nurses and hospital assistants, who may be employed in time of war, subventions are granted by the Central Committee. It would be difficult, even if it were necessary, to enumerate all the different institutions which are thus working, directly or indirectly, for the objects of the Red Cross. Incidentally I may name the Deaconesses' Institution at Bielefeld, the Friedrich-Wilhelm-Victoria-Stiftung at Insterburg, the Mutterhaus at Kiel, the Sanitary Institution at Loschwitz, near Dresden, of which Madame Simon is the directress, the asylum for female nurses at Frankfort-on-the-Main, and the Augusta Hospital at Berlin.

The title of this last most excellent institution reminds me that no account, however incomplete, of what the Germans are doing to alleviate the sufferings caused by war would be just, did it omit to acknowledge that the Empress Augusta is not only the President of the German Central Society *de jure*, but also *de facto*. In every way, by word and example, she has encouraged and urged forward the work both in peace and in war; and whether at Berlin or in the provinces, she seems to regard any fatigue as light which enables her to assist it by a gracious act. Nor is Her Majesty less generous with her purse. During the Conference held in the Red Cross Pavilion at the Universal Exhibition of Vienna, in 1873, she awarded twenty gold medals for the best models of hospitals and surgical appliances for the relief of wounded soldiers, a prize of £300 for the best essay on the Convention of Geneva, and a prize of similar value, and two prizes of £75 for the best manuals of military surgery. Of the medals not one came to England, which was scarcely represented in this department of the Exhibition: but it is satisfactory to know that Surgeon-Major Porter, Assistant Professor of Military Surgery at the Royal Victoria Hospital at Netley, gained one of the prizes for his treatise on military surgery.

The work of the German Red Cross and kindred societies is far too extensive to allow of its being described in detail in one short paper; but I may mention one important fact that deserves to be noticed. Quite recently in every province of Germany a corps of *kranken träger* (bearers) has been enrolled and attached to the army-corps of that province. Each man is furnished with a uniform, and he is paid a small annual sum, in consideration of which he must undergo the necessary training, and he must hold himself ready to march with his division in the event of war. It may be briefly summarised as follows: Germany possesses six Central Committees at Berlin, Munich, Dresden, Stuttgart, Darmstadt, and Carlsruhe, with a superior Committee at Berlin. Under these are some hundreds of less important Committees. In peace, hospitals for invalid soldiers are maintained, nurses and ambulance-helpers are trained, exhibitions of hospital and sanitary material are held, and, as I have shown, prizes are bestowed for the best models, and also for the best essays on given subjects connected with hospital work. A military inspector and commissioner for the volunteer societies assists at Conferences held at the Ministry of War; and in fact the most complete solidarity is maintained between the various Societies, the Committees, and the War Department. On the outbreak of war, as was witnessed in 1870, a message flashed along the telegraph-

wires from Berlin is sufficient to militarize the whole system in the course of a few hours, and the German Red Cross army is found to be almost as completely organized as the combatant portion of the Army of the Fatherland.

As has been already stated, it was not until after the campaign in Bohemia in 1866, that Austria signed the Convention of Geneva. A Red Cross, or Patriotic Society, was then formed, which, as far as I can gather, has since been chiefly employed in supporting invalids, the victims of that war. The annual Reports of the society indicate that all its stores have reference to treatment in fixed hospitals; they are in fact hospital equipment stores, with the exception of three carriages, each for one wounded man, which are probably intended for bringing patients to fixed hospitals, and not for use in the field.

During the Franco-German war, Austria was officially represented on the German side by Professor Billroth, and on that of France by Professor Mundy. Each was accompanied by one or two surgeons and hospital assistants. This is an interesting fact, because it was the first time that the government of a neutral state sent surgeons to aid the medical establishments of the belligerent armies, in accordance with the desire expressed at the Berlin Conference in 1868.

But the Austrian Red Cross Society had no organisation for war, and was only able to contribute a few stores.

It must not be thought because the Austrian Patriotic Society is less actively employed than those which have just been mentioned, that the relief of sick and wounded soldiers in war receives less consideration in Austria than in France or Germany. This is by no means the case. The Teutonic order of which the Archduke William is Grand Master, has, with the sanction and approval of the Minister of War, now taken the lead in this direction in the most liberal and intelligent manner.

This order already possesses forty sanitary columns ready to supplement the forty infantry divisions of the regular army. The material which comprises ambulance carriages and fourgons with their contents, is distributed over seventeen garrison towns, in several of which the order has constructed special waggon-sheds at its own expense. It has spent £30,000 in forming sanitary trains for the first line, and a reserve fund of £15,000 will be required to place them on a war footing. By request of the Ministry of War, the baggage-waggons have been arranged, in case of need, to carry severely wounded men. In this and in many other ways it is needless to particularise, the expenses incurred by the order have been increased and have far exceeded the original estimates. The possibility of mountain warfare has not been forgotten, and experiments are still going on with the object of arriving at the best forms for bearer-chairs and bearer-baskets.

Regulations for the guidance of the order in its relations with the army are now in course of arrangement at the Ministry of War.

It is the intention of the order to establish a divisible fixed hospital for 600 wounded men; but the number is to be limited to 200 until the funds are sufficient to allow the plan to be fully carried out.

I may also add that this distinguished order, on the roll of which are most of the noblest names in Austria, maintains three hospitals for the civil population. At the beginning of last year, there were in these 36 patients; during the ensuing twelve months, 332 were admitted, of whom 303 went out cured, 24 died, and 41 remained at the end of the year.

Another noble order, that of the Austrian Knights of Malta, has also entered the same field of benevolent activity; and it has undertaken to provide twelve sanitary trains for use on railroads. The value of such trains can scarcely be appreciated in this country; but it is otherwise on the continent, where in all recent wars, railroads have played a very important part, both in military operations and for hospital purposes. The best model that has yet been used was that employed by the Germans during the Franco-German war; but this has been surpassed by the train which was built in Paris from the designs and under the superintendence of Baron Mundy for the French Société de Secours. This was first exhibited in the *Sanitäts Pavillon* of the Vienna Exhibition in 1873. It contains wards for the patients, separate rooms for the medical officers and nurses, a kitchen, store rooms and everything necessary for the purpose for which it is intended. In a word, it is best described as *un hôpital roulant*. It is on this plan I believe that the sanitary trains are being constructed for the Malteser Ritter, who will bear the expense and responsibility of this important supplement to the hospital establishment of the Austrian army in the field.

I have more than once casually mentioned the name of Mundy, but I must be allowed to say something more of this well-known and eminent Professor. In 1859, he was acting as Aide-de-camp to General Giulai at the head-quarters of the Austrian Army in Italy. He then left the combatant ranks in order to devote himself entirely to that profession of which he is now so distinguished a member; and in the war of 1866, we find the gallant cavalry officer transformed into Surgeon-Major of the Army in Bohemia. At the Conferences held at Geneva, Paris, Berlin, and Vienna, he appeared as the enthusiastic advocate of reforms in the treatment of the wounded. During the siege of Paris, he identified himself with the French Société de Secours aux Blessés, and he established and personally directed a large hospital at the Palace of the Corps Législatif, where he was ably assisted by Dr. Von Mosetig. During the Commune, he designed and constructed a Pavillon hospital, of novel form, for use in summer. This is still standing in the park of St. Cloud, it having been accepted by Marshal MacMahon on behalf of the Army. In 1870-1, ambulance carriages of the Mundy pattern were to be seen wherever there was a column of the Société de Secours; and, more recently, I have met in Navarre with some of these carriages and mountain stretchers, also the invention of Professor Mundy.

All that the two knightly orders I have mentioned are doing in Austria for the sake of the soldier may be traced to the inspiration of the same gentleman; but, as I have shown, in this respect he knows no nationality. Were I asked to name one man who, more than

any other, is the incarnation of the Red Cross idea, I should unhesitatingly say Professor Baron Mundy. In forwarding the cause he has at heart, he has spared neither his purse nor his person: and to his courageous perseverance, disinterested advocacy, practical ability, and restless energy must be attributed a very large share of the success that has attended all recent efforts for the alleviation of the sick and wounded in war.

Perhaps I ought to have abstained from any special allusion to the work performed by three or four of the National Aid Societies of Europe, unless it were possible to refer to others equally deserving of notice. But the reason for the selection I have made is obvious. It would take far too much time to describe in detail the system pursued by all similar societies, and I have therefore chosen those which have made themselves the most prominent, or which offer the best examples of the preparation that can be made in peace for time of war.

I might call attention to the activity of the Russian Society, and describe what it did in France and Germany in 1870-1; and later for its own troops in Khiva. More recently it has sent a well-equipped ambulance column to the Herzegovina. Like some other societies already mentioned, it has not limited its work to the alleviation of sufferings caused by war; it organized considerable relief for the victims of the famine in Samara, and also for the inhabitants of Morchansk, which town was destroyed by fire in May, 1875.

When the war broke out in 1870, it is doubtful if any Society, except those of Germany, was so well prepared as the Dutch. This was, in a great measure, owing to the interest which had been excited by the admirable Exhibition of Hospital and Sanitary Material, and the Conference, held at the Hague in 1869.

The war in Atchin has offered other opportunities to extend the experience of this admirable Society, and to utilize some of the excellent *matériel* which it possesses.

Belgium, as in everything which exhibits civilization in its best and noblest form, also claims a high place for her Red Cross Society. And it will not be out of place, I think, if I call attention to the International Exhibition of all objects connected with the saving of life, and the Congress of Hygiène, which are shortly to be held at Brussels. The initiative in this case is entirely attributable to Lieutenant-General Renard, one of the first and most eloquent advocates of the Red Cross. He has travelled over Europe, endeavouring to obtain official recognition and the support of all the Governments in Europe for his useful and philanthropic scheme; and I earnestly trust that a great success may attend efforts which appeal so irresistibly to all members of Red Cross Societies, whatever may be their nationality.

Spain has been afflicted during the last few years by a miserable civil war, which fortunately has now ceased. The Red Cross Society, under the guidance of the Central Committee of Madrid, has performed good work; and La Caridad, a Carlist society with the same object, but under a different flag, has also laboured well in the same field. Whilst deprecating anything like jealous rivalry in such a cause, it is satisfactory to know that these two societies carried out

their one object, and acted with regard to each other in a manner worthy of the old chivalry of Spain.

It is a very common thing for the National Red Cross Societies to be included under one title—the International Society—and misconception on this point has led to many serious mistakes. Each Society is a national one, though the spirit which animates them all may be called international; and this reminds me that the solidarity which now exists amongst all the societies of Europe is chiefly due to two gentlemen, who were the most zealous pioneers of the Convention of Geneva. M. Gustave Moynier and Dr. Appia, during thirteen years, have laboured incessantly on behalf of that Treaty, which was first proposed in the *Société Genevoise d'Utilité Publique*. They assisted in framing it; and one or both of them has been present at every conference and exhibition of hospital material which has been held under the Red Cross. They have been the most active members of the International Committee which has its head-quarters at Geneva, and of which, since the death of General Dufour, M. Moynier has been the president. When the war broke out in 1870, they formed an agency at Bâle. This not only offered a means of communication between the societies of the belligerent states, but it also became a channel through which gifts from neutral States of a value of more than three millions of francs were distributed amongst the sick and wounded.

Whatever may be the fate of the original Agreement, the names of Moynier and Appia will always be associated with it; and we need be under no apprehension, but that the philanthropic work commenced at Geneva will continue to flourish under some name and flag so long as the world shall suffer from the curse of war.

I have thus described, in a general and by no means exhaustive manner, the work in which some of the Red Cross Societies of Europe are occupied in time of peace. Some portion of this work, excellent as it undoubtedly is, is of a nature which ought not to be comprised in the sphere of these institutions. For instance, it should be no part of their work to give pensions to invalid soldiers, or to the widows and orphans of men who have died in the service of their country. Such work is the legitimate province of the Government acting for the country at large. If done by a non-official establishment, such an establishment might be made collateral to that of a Red Cross Society; and I apprehend there is no reason why, in this country, a separate Society, like that which administers the Patriotic Fund, should not be formed to supplement pensions awarded by Government, and to watch over the interests of aged and crippled soldiers and sailors and their widows and children. I venture parenthetically to recommend an extension of this field of usefulness as one that would materially help to add to the popularity of military service in this country.

In time of peace, it is not only within the sphere, but it is the positive duty of a Red Cross Society, to use every opportunity to educate a staff for the work which it professes to be able to perform. This can be done through the instrumentality of institutions entirely supported by Red Cross Societies, or by means of independent establish-

ments partially subsidised by them. The best examples of this kind of instruction are to be found in Germany.

A few years ago we were told that the legitimate susceptibilities of the Army medical profession would be excited if an attempt were made to introduce a civilian element into the Army hospitals in time of war. Experience has proved the fallacy of this assertion, and there is not a single Army in Europe in which the services of well-trained volunteer hospital assistants would not be received with satisfaction, during a campaign. Members of Red Cross Societies have a well-defined mission to fulfil, and those who understand and act up to this would be the very last to usurp functions which do not belong to them, or in any way endanger the feeling of cordiality with which the military medical profession and the Army hospital corps will be ready to regard them. Whether in peace or war, no man or woman is fitted for hospital work without some previous and special training, and I need scarcely add that strict discipline is absolutely indispensable.

I have endeavoured to direct attention to the increasing activity of the Societies on the continent, all of which are more or less patronised and encouraged by their respective Governments. It would be easy for us to follow their example: but it is this very facility, and the fact that in England all philanthropic movements are due to private initiative, which makes us so indifferent with regard to the future. What the British National Aid Society did in 1870-1 without previous preparation is regarded as satisfactory proof of what it would do if called upon again, for our own or any other Army, but such a precedent cannot safely be relied on.

I venture to say that there is not one of those who responded to the call of Colonel Loyd-Lindsay in 1870, who would not be ready to do so again, if required, bringing with him the experience gained in that memorable year. But this is not enough. The muster-roll of the Red Cross already shows many blanks. Some have passed away, and others are hastening on; new blood is wanted. As we recruit our combatant army, so must we recruit our non-combatant forces. And not only this, it is absolutely indispensable that whilst some direct attention to the perfection of weapons of destruction, others should be occupied in doing all they can to prepare for and mitigate the wounds which such arms are destined to inflict.

As was said by Dr. Landa, the Spanish delegate at the first Conference held at Geneva, in 1863:—"We are apt to accuse war of not allowing the arts of peace to flourish, but peace also, when it is of long duration, makes the art of war to fall into forgetfulness; and it is strange that this same forgetfulness is much greater for all that concerns the arts intended to preserve the Army than for those destined to destroy the enemy. At the decisive moment we ask for a miracle, and as this is not forthcoming, we exclaim against deception, instead of crying out against improvidence."

Nothing I have said is intended to depreciate in the smallest degree the value of the Army Medical Establishment, and I should not be standing here now, if I thought that one word of mine could seem to disparage the eminent services of this distinguished branch of the military profession.

What better authority can I adduce than that of a gentleman whom I have already quoted? In 1866 Professor Longmore, when advocating the formation of a National Committee in England, said:—"Committees no doubt will be formed, and subscriptions poured in, as has happened hitherto, as soon as there is need of them; but, as heretofore, there will be absence of system and independence of action, and there will not be the advantage, at any rate at first, of Government support; while, in other countries, on war breaking out the necessary preparations will have been long made and fully considered, everything will be systematized on preconceived plans, so as to harmonize with the arrangements of the Government and the action of the combatant and Army medical authorities."

In 1871 Colonel Loyd-Lindsay concluded an interesting account of what the British National Society for Aid to the Sick and Wounded in War had done during the Franco-German War with these words:—"Can we wisely or justly decline to do what other nations have done, namely, to appoint National Committees, recognised by Government, whose functions it would be to organize the distribution of the national donations on a sound and proper footing, and thus be prepared to supplement what all admit must greatly need expansion, viz., the medical department of the Army in time of war?"

And in the interval which elapsed between the lecture of Mr. Longmore in 1866 and that from which I have just quoted, Lieutenant-Colonel Henry Brackenbury made an appeal to the British public in the columns of a daily newspaper. He said:—"In Heaven's name, let us be up and doing! We have signed the Convention of Geneva. We are bound in honour to be working in time of peace, not for ourselves alone, but for all the other nations whose wounded may, by even the remotest possibility, ever fall into our hands. We invite discussion and action on a subject affecting both our soldiers' lives and our national honour."

And you, Ladies, who are to be found in every place where there is sickness to relieve, wounds to bind up, or grief to assuage, permit me to conclude in the words used by the Empress Augusta, when taking leave of the General Assembly of the Patriotic Association of Ladies, which is closely allied to the Red Cross Societies of Germany.

Her Majesty said:—"Let us continue to act and to work together in the great task which rests upon us. Let us show during peace the same perseverance as in time of war. Let us have the conscientious conviction that we are devoting our strength to the service of our country, and we shall find in this sentiment our best reward."

The CHAIRMAN: No subject can be more interesting to the Army and to the nation generally than the subject which has been brought before us by Mr. Furley; and it is well known how successful in diminishing the terrible sufferings of war the exertions of this Society have been. I hope that if any gentlemen have remarks or suggestions to make, they will offer them freely to this assembly.

Professor LONGMORE, C.B.: I find myself unexpectedly called upon to make some remarks on the excellent paper which has just been read by Mr. Furley. Unfortunately I did not hear the first part of it, but I know its general tenor. I am quite certain we must all feel very greatly indebted to him if only for calling attention to the necessity of considering our own position in respect to the

¹ See Journal, vol. xv, p. 381, *et seq.*

available means for supplementing the official aid to wounded in time of war. He has shown us what is being done in other countries and has thus indirectly called attention to what is not being done in our own country. There can be no doubt that should war unhappily arise, and there be a necessity for carrying into practical operation, the scheme which has been lately devised for the mobilization of our forces, there can be no doubt that the Army Medical Department will require extraneous help, and that the War Department may well expect to derive some assistance from the "National Aid Society for help to Wounded Soldiers in time of War." By the mobilization scheme, the organization of each corps d'armée requires no less than 267 surgeons with nearly 3,000 men of the Army Hospital Corps. There are eight such corps d'armée contemplated for the defence of the country, and besides these forces there is surgical assistance for the garrisons, for general hospitals, and other establishments to be provided for, as the mobilization scheme contemplates additions to the fighting strength of the regular and Militia forces of the country from the Volunteer combatant forces, so I think the Army Medical Department will have to look for additions to its surgical and nursing staff from civil volunteers. There will certainly be a difficulty in finding surgeons and hospital attendants in sufficient numbers in the usual official way. As far as I am aware, although I have the honour of belonging to the National Aid Society, no scheme has as yet been considered for meeting the wants that will then arise, and I fear the National Aid Society will be looked upon as having somewhat neglected its duty, if it do not in time of peace make some preparation for the demands which are sure to be made upon it in time of war. I believe there are some difficulties from the constitution of the Society in respect to outlay of money; but if Mr. Furley, who has so fully considered the subject, and who is personally so well acquainted with all that has been done in continental countries, and especially with the arrangements between the National Aid Societies in those countries and their respective war departments, would frame a scheme in detail for carrying out a system of training and preparation, in harmony with the peculiar institutions of our country, and would submit the scheme to the Committee of the National Aid Society, I feel confident his scheme would be fully considered, and that, if practicable, the Committee of the Society would do all they possibly could to carry it into effect. I feel as a member of the Army Medical Department that the department itself is indebted to Mr. Furley for calling attention to the important questions which are connected with the subject of volunteer assistance to the official surgical staff of the Army on occasion of war.

Lieut.-Col. HENRY BRACKENBURY, R.A.: I have listened with very great interest to the exceedingly sensible and practical remarks that Mr. Furley has made to us today. There are two points of view from which this Red Cross work has to be looked at. There is the point of view of the soldier and the point of view of the philanthropist. I being a combatant soldier by profession, was present as a philanthropist for five months during the Franco-German war, and I am bound to say that in my opinion it is not possible that again in any war the same latitude can be allowed to members of national philanthropic societies as was allowed during that war. I think that the occasions on which that latitude was abused, were few and far between, but I am sorry to say I do know of occasions on which it was abused, and if I were in command of troops, or chief of a staff to a General in command, I would absolutely forbid anything like that latitude which was allowed in the Franco-German war. The want of any recognised understanding as to the position of the agents of Red Cross Societies other than those of the belligerents themselves, led to strange misconceptions. People wearing a Red Cross upon their arm considered themselves almost insulted if they were not allowed to go anywhere and everywhere, and to pass without restraint from one line to another, and their pretensions were often admitted. Application was made by the English National Society for permission to send an agent with medical comforts into Metz during the siege, though we all know that suffering is one of the chief means by which a blockading force is endeavouring to break down the besieged troops. Naturally the permission was refused. In another war these irregularities will not be tolerated; and, therefore, if these philanthropic efforts are to be continued (and I believe it is impossible to overrate the amount of good done by them) it is absolutely necessary that some definite and distinct understanding should be come to by our Government as to

what position the Red Cross Society of our own country as well as those of foreign countries are to be placed in in the event of war. I believe at this moment we are absolutely without any arrangement between the Government of this country and the representatives of the National Aid Society, which has still a very large sum of money in hand : and further the Society itself is without any arrangement as to what is to be done by it in case of war and our own troops being engaged. Nor do I see how it is possible for the National Society to ask the Government to recognise them as long as they have no organization of their own : and we have not got any organization whatever with which to take the field. I believe I have the honour to be on the Council of the National Aid Society ; and I own, to my great regret, that we have not stirred one single step since the war of 1870, in the direction of organizing ; and until we have done that ourselves, how are we to go to Government and say : " We want you to make arrangements as to our position and sphere of work ? " The first thing should be for our Society to go to work and to devise a practicable scheme of action. We have on our Committee such men as Dr. Longmore and Dr. Manley ; we have combatant officers who have seen war ; we have civil surgeons of the greatest possible eminence ; and we have the practical experience of Mr. Furley. Surely amongst us all, we ought to be able to arrange a scheme with which we can go to the Secretary of State for War and say, " Will you go " hand in hand with us and help us to carry this out ? " If we do that, then I believe we should find at all events that some of the obstacles sure to be put in our way, might be done away with. More than two years before the Franco-German war, my attention was directed to this subject, and I wrote those words which Mr. Furley has quoted to-day, and which are as applicable now as then, " In " Heaven's name let us be up and doing."

Dr. MANLEY, D.C. : Having been engaged in connection with this Society, I must say the thing that struck me most was the want of detail, the want of organization, and the want of discipline which existed under the Red Cross. That may be excused by the fact that at that time it was a new organization altogether ; but still there did not seem to me to be a sufficient connection between the light-field ambulance in the field and the dépôt. For example, after one of the battles, I remember a German surgeon coming into the house where we were and stating that there were 2,000 wounded lying in the villages around, and they had not so much as a piece of bread or a bandage for them. Now seeing what an organization the Germans have, that will tell you what war is, and how the departments must be supplemented, because we find that notwithstanding the most perfect organization, on a pinch of that kind it is impossible that they can do everything. It is therefore most essential that it should be supplemented by a well organized volunteer aid, because as far as my experience goes, it was immediately after an engagement and before the regular field hospitals came up, that the volunteers were of most use. When the field hospitals came up, the Germans immediately took the wounded out of our hands ; and we were of no further use except for transporting them. Therefore it is necessary that societies, such as the English Society, should have on its roll an equipment of field ambulance stores, medical and surgical, and provisions for the support of the wounded, and that they should have volunteer aids enrolled and properly trained, because volunteers without organization, though they are zealous and active, have great waste of power and a great waste of material. I should like to ask one or two questions which more particularly affect this country. We have seen how easily ships can be sunk, and no doubt in the first naval engagement there must be several ironclads sunk. Is there any means of saving the wounded from being drowned and of taking them rapidly to England, even before the action is over ? have they any plan of a hospital-ship for conveying the wounded ? Is there any volunteer staff ? because that is a point where a volunteer aid society can come in very well indeed. In the Ashantee war the " Victor Emmanuel " was kept as a hospital ship, but there is nothing of that kind ready for a naval engagement now. I think in that direction there is the promise of a very good work for a Volunteer Aid Society. I mention these facts because I am not aware that anything has been done at all in the society latterly. There is a great field for volunteer aid if properly organized, but there must be discipline and there must be organization and proper attention to detail.

General Sir RICHARD WILBRAHAM, K.C.B.: I wish to make one or two remarks on what has just been said. I think there is great danger of our trespassing upon another department which does not belong to a volunteer society, when it is proposed that the National Aid Society should provide ships to carry home the wounded. It appears to me that if there is one duty more evidently that of the State than another it is that of sending home the wounded. The National Aid Society ought in my opinion to begin with much smaller things than that. There are two questions I should wish to ask the lecturer. We have heard a great deal about what foreign societies of this kind are doing, but we have heard nothing about what our own National Aid Society is doing. I should like to know whether it has ambulances in store or any material with which to take the field, in case its services should be required, and in the second place, as Colonel Brackenbury says, we ought to be up and doing. I want to know whether the National Aid Society has taken any steps to secure the services of experienced surgeons or even of trained orderlies, or whether they would be found as unprepared as they were at the outbreak of the Franco-German War? The best ambulance we had in that war—in which I believe that a number of the members of this Society worked—was, if am not mistaken, one furnished by our Government from Woolwich. I do not know whether there was any ambulance furnished by the National Aid Society. I think we are treading upon very dangerous ground if we are supposing that a private society can, or ought to do the work of Government. Of course our position is very much more difficult than that of a similar society in any foreign country. The natural duty of such a society would be to assist and supplement the military organization of their own country. One of the speakers has expressed his opinion that the work of this society would have to encounter the jealousy of the War Office. I do not think that there would be any fear of this, if their services were required in our own country. But I think that there would be great fear of its incurring the jealousy of the military authorities of any foreign country to which it was giving its services, unless the utmost prudence were exercised.

Admiral Sir HENRY CODRINGTON, K.C.B.: I must say I think there is hardly so much field for the exertions of the society in the Navy as there would be in the Army. In the first place, I do not think that our number of wounded would be so great, nor would they be so dispersed as in warfare on shore. It is suggested that aid should be given in the case of ramming, and that the wounded should be disposed of; I am sorry to say in that view it is not only the wounded that would be disposed of, the ship herself and all on board of her would be disposed of also. Next, with respect to the surgical care of those men who happen to be unluckily wounded, the medical staff, I think, would be sufficient and it would be supplemented very largely by the civilians on board the ship. They are the assistants of the medical profession in the cockpit, and wherever else the wounded may be. I do not think there is such urgent necessity for increased surgical assistance in the Navy, but if there were, I do think it would be the duty certainly of the Government to provide it, and I do not think really and truly there is any means for that assistance being given in each particular case by any civilian society. Next, as to transporting the wounded home. Certainly that is a thing we in the Navy ought to do; but there is a very great difference between picking up wounded men from a field and hoisting men out from one ship in the middle of the Atlantic and transporting them into another, even supposing there were neutral ships to receive the wounded. Again, if a ship has been in action, I think she will very shortly go into harbour if she swims, and more particularly as warfare now will always be carried on by means of steam propulsion, for no war-ship could be kept out of her harbour after action more than a few days, certainly not weeks, and it might be very dangerous to move a recently wounded man from a ship immediately into another ship. On the whole, therefore, I do not see any field for a society of this excellent nature to be brought to bear upon the Navy as it is now constituted, and as it will be in any future warfare in which it may be engaged.

Sir EDMUND LECHMERE, Bart.: I must express my acknowledgments to the Council of this Institution for their kindness in giving me an opportunity of hearing Mr. Furley's very valuable paper, and I may be permitted as a civilian to express my hearty concurrence in what has fallen from the previous speakers. It has always been a

great cause of surprise, and some disappointment to me, that more active steps have not been taken by the Red Cross Society, following in the steps of other branches of the same organization abroad, to carry on in times of peace some corresponding services to those required in war. I cannot conceive any great difficulty which would arise in taking such steps, and I can only suppose that the state of quiescence in which the Society has remained in England has arisen from the belief that everything was right and proper, and that in time of war the skeleton would be filled up, and the Society might resume the field with the same activity it before manifested. But I cannot help thinking, after what we have heard, that this is a mistake. I think also there has been great disappointment in the provinces on this question. I can only say that in our own county of Worcester very active steps were taken to raise a very large sum of money and a considerable amount of *matériel* during the Franco-Prussian war, and it was looked upon that our Worcestershire branch of the Red Cross Society would be a permanent institution. The subscriptions were kept up, and all our books are ready, and the storekeeper is ready at any moment to set to work in the Town Hall of Worcester, and to take active steps to carry on the work of the Society. I believe, if the effort were made, a great amount of good might be done, not only in reviving the spirit, which ought not to subside in times of peace—the spirit of philanthropy, which was so conspicuous at that period, and which proved so valuable in time of war—but I believe also the National Society might gain valuable experience by subsidizing some institutions for nursing the sick poor and for training nurses for the sick—those societies that take upon themselves the conveyance of the sick to hospitals. I am happy to say the English Branch of the Order of St. John of Jerusalem has taken upon itself the provision of means for the conveyance of persons to hospitals who have been wounded in such accidents, and I really believe that by giving encouragement to this or similar hospital organizations, a great deal might be done to keep up an organized staff of philanthropists, who might by proper discipline (and discipline is everything) become very valuable in any future war. I therefore hope that what has been said to-day may call the attention of the Council of the English Red Cross Society to the real advantage—I might almost say the duty—of utilizing to some extent the great resources which the country has placed in their hands; and by calling to their aid the admirable body of men who have been active members of that society, they might readily frame a good and practical scheme for some useful and national work.

Sir EDWARD PERROTT, Bart.: With regard to the observations that have fallen on the subject of abuses under the Red Cross cognizance, it has appeared to me very often that there is not sufficient executive power given to medical officers in general. We know that at the moment the medical officer goes to a military parade his mouth is closed.

The CHAIRMAN: I think that is perhaps a little beyond the question before us to-day. I hope you will not go into the general question of medical authorities with regard to the War Office or the Commander-in-Chief.

Sir EDWARD PERROTT: Not in that point of view, but it is with a desire of seeing whether these abuses which have been referred to would not have been controlled if the medical officer in charge of parties under the Red Cross cognizance was enabled himself to be accountable for every man that would be present and claim to be under that badge.

Deputy-Commissary J. S. YOUNG: I am sure every one must be indebted to Mr. Furley for calling attention to the humanitarian movement which had its origin in 1870 and 1871, and which, I think, has lain too long asleep. The only fear I have from what has come out of the discussion to-day, especially from those who hold a position in the Army at present—Colonel Brackenbury and Surgeon-Major Manley—is that the object of the lecturer, which is the benefit of the sick and wounded in time of war, will be frustrated if the responsibility of the Government itself is not fully brought forward. It seems to me that if we are to leave so much to the National Society for Aid to Sick and Wounded, Governments will be very much tempted to leave aside the proper provision that they ought to make for aid to their own sick and wounded in time of war. A distinguished Officer, who was a governor of one of our largest medical establishments, has spoken, and it is within his recollection, I dare say, that a Royal Commission sat in consequence of the disastrous

state of affairs in connection with the sick and wounded of the army in the East in 1855 and 1856. The outcome of that Royal Commission was that the executive of the Army was so strengthened that in all our recent expeditions, at any rate, there was no necessity for aid to the sick and wounded from outside the Army itself. I am very much afraid, if too much prominence is given to voluntary effort that a reaction might take place. A re-action has already taken place, I am afraid, as regards the executive branch of the Army charged with the welfare of the sick and wounded in war. At the same time I cannot agree with Colonel Brackenbury that it is necessary to regulate these things, as regards the National Aid Society, so closely as to bring it into official relation with the executive of the Army. The old proverb that "Necessity knows no law" holds equally good with reference to any great war; that where there is a necessity then there will be a gladness to accept the efforts of voluntary societies, and so long as the action of the National Aid Society is confined to that, I think there will be more than an ample sphere for their efforts, as there was in 1870 and 1871. Surgeon Manley referred to efforts in connection with ships at sea. I cannot fancy that being the sphere of a National Society at all, for the simple reason that you cannot guarantee for a National Society that there will be the funds necessary. It takes an immense amount of money to have a ship and keep it at sea for any indefinite period. It is the peculiarity of the circumstances connected with aid to the sick and wounded that everything is unforeseen; for instance, we know that the supply of an army is a question to the commissariat of how many effectives they have to supply. This is a matter which can be dealt with to a degree of accuracy, but when you come to sick and wounded, they never know how many they have to supply and it is in the time of these unforeseen emergencies that the aid to sick and wounded will come in most efficiently. Having had some experience, and having served in the service of the National Society, I feel that we have not heard the other, the official, side of the question. His Royal Highness, at a recent meeting in this theatre, stated that people by their absence sometimes seemed to take for granted that everything was all right. I hope that those present here will attend at the lecture to be given on the 29th instant by Surgeon Sandford Moore, a distinguished Officer of the Medical Department, and who also served during the Franco-German war, and then they will be able to hear the official side of the question. I am perfectly sure that with the special attention that has been given to the subject by the lecturer, and that which will be given to it by Surgeon Moore, some good ought to result.

Mr. SHEE: During the German war my brother-in-law, Baron von Laner, was engaged in building a harbour for the German Government. Finding his civil career temporarily suspended, he set about organizing voluntarily, in conjunction with those under him, a service corresponding somewhat to that which came to the aid of the military, and accordingly there was inaugurated a new branch which, considering the position of Germany as a naval power, certainly might put us to shame. It went by the name of the "See-wehr," or Naval Militia, and did good service in protecting the harbour and also in coming to relieve the sick and wounded. I mention this in corroboration of the remark made by Surgeon-Major Manley, and my belief is that if Germany, taking so humble a rank as a naval power, thought it worth while, under a stress of circumstances unparalleled, to do something in the direction mentioned, then surely it might be for our own advantage and ultimate good were we to follow the example thus given us.

Dr. DANFORD THOMAS: I was six months, during the Franco-German war, engaged by the Society, and the thought that has struck me, after what I have already heard to-day, is that our Volunteers in this country are without any medical organization whatever for time of war. They have their surgeons and their assistant-surgeons, but there is no organization at all for taking charge of the sick or wounded, nor are there any ambulances for that purpose. This large body of men if brought into action would be entirely destitute of medical provision and service in time of war, therefore if a Red Cross Society did nothing else but support our own soldiers in time of war, that would be in itself one great reason why a thoroughly organized system should be adopted. The only difficulty in this plan would be if our assistance as an International Society was required for other countries. If we confined our Red Cross services to our own country, there would be little or no difficulty in

organizing ambulances to attach themselves to the various regiments of the volunteer service, where they might be properly trained and really rendered efficient for any emergency.

The CHAIRMAN : There is one point I should wish to refer to, which is a military one. I certainly must endorse the feeling about there being a limit and a distinct limit to the presence of the Red Cross, and the facilities of getting about and using the Red Cross in a way that General Officers, perhaps, must object to. It is a very difficult duty to be obliged to say that what is nominally for the assistance of the sick and wounded is something that is positively noxious to your own Army, perhaps, by information or facility being given to the enemy, and must be prevented. Therefore, I cannot but feel that that is a very strong point that has been mentioned by Colonel Brackenbury, and one on which it would behove the Society itself to get the most stringent rules laid down in order that they may be protected in their real legitimate duty, so as to draw a line and prevent any illegitimate entries into fortresses or communication being made which would put a stop to the real well-doing and well-being of the Society itself. It is a very important point for us to consider, and they must feel that there are occasions in which it is possible that the Red Cross may be abused. Of course, every enemy will take advantage of getting information and using even the most legitimate means in an illegitimate manner—the old story of “all fair in war,” you go very near the wind in many things of that sort—therefore I think the Society should lay down its own rules strictly so as to support the real authority of a General Officer, so that he may be able to give them the utmost protection with safety to his own Army. I will leave it to Mr. Furley to enter into the other questions with regard to the Society itself.

Mr. FURLEY : I do not think that there is much more I can say on the subject. Dr. Manley's proposition as to a scheme of relief in naval warfare has already been brought forward at more than one conference, and the French Society, as you, perhaps, have noticed, calls itself *Société de secours aux blessés des Armées de Terre et de Mer*. I think that societies rather shirk this question because they see the difficulty Sir Henry Codrington has alluded to. In 1868 I was asked at Berlin if I could do anything in England towards this object, because it was thought of all countries in the world England was the one which ought to initiate this branch of relief ; but I very much doubt if there is any one in England who sees a way to any practical scheme of relief for the wounded at sea. In fact, I believe the majority of naval men are quite satisfied with present arrangements. At the same time, I hope the question may be ventilated at the next Congress. Sir Edmund Lechmere has alluded to what might be done in time of peace. I feel very strongly upon that subject. I think our starting point should be the connection between the Society and the British Army. The work that the National Society ought to undertake should be of such a nature as to be useful to hospitals and nursing establishments in time of peace. If then we are required to aid our own Army Medical Establishment, or to render any assistance to foreign Armies in supplementing their medical establishments, we shall be ready, if called upon, to do so. I do not think there would be the slightest difficulty if there was a proper organization connected with our civil hospitals in time of peace, such as you find in Germany and elsewhere. Professor Longmore has suggested that I should draw up a scheme. I confess I prefer that it should be done and drawn up by a man like himself. I will gladly give any assistance I can, but I think there are men much better fitted than I am to take the lead in such a matter. I should not shirk from any labour it might entail, because I think it ought to be done.

General WILBRAHAM : I asked two definite questions ; whether Mr. Furley considers they come within the scope of his lecture may be another question. First, has the National Aid Society a store of ambulances and material ready to take the field ? and, in the second place, in the event of their being called upon to take the field, have they made any sort of arrangement by which they could secure medical aid and the assistance of trained hospital nurses ?

Mr. FURLEY : Having been very much out of the country of late years, I am not aware that we possess any material at all. I believe we have two or three ambulance carriages presented by the French Society to us after the war, but Dr. Manley knows more about that than I do.

FOR AID TO SICK AND WOUNDED SOLDIERS IN WAR. 657

Mr. LONGMORE: I am sorry to say the Society has no depôt of stores, and, secondly, that as far as I am aware it has not made any preparation for meeting the demands which may be made upon it in time of war. I would also, as I have been called upon to speak again, merely call attention to one fact which has scarcely been alluded to, but which has an important bearing on some of the observations which have been made. Colonel Brackenbury mentioned that a great number of irregularities took place under the Red Cross during the Franco-German war. One irregularity is sure to lead to other irregularities, and I must say that in the very first place the fact of our National Aid Society interfering at all in that war was in itself an irregularity. There is no treaty or legal enactment by which our National Aid Society could under any circumstances rightly assume to itself an international character, or by which any English person under any circumstances could claim a right by virtue of being a member of a Red Cross Society to be on or near a field of military operations in which foreign nations only were concerned. The Geneva Convention simply legalizes and recognizes in each country a National Aid Society, and that National Aid Society has no standing whatever until it has received the sanction and has come more or less under the authority of the Minister of War of that country. The Convention of Geneva most strictly excludes all reference to independent volunteers. There is no mention of a volunteer, separate from the military ambulances and hospitals of the belligerents, in the treaty from beginning to end; and, having taken part in framing the terms of the Convention, I know for a fact that so general was the feeling for excluding such persons, seeing the utter impossibility, without grave irregularities ensuing, of giving anybody who might choose to take it the right as a volunteer to be on the field among combatant Armies; that had volunteers, independent of nationality and military control, been introduced into the articles, the Convention would never have been acceded to. Indeed, with regard to the French representatives who were at the framing of that Convention, they mentioned that they had distinct orders if the word "volunteer" were introduced into the treaty that they were immediately to leave Geneva, and to take no further part in the proceedings. Those who will study the Convention of Geneva carefully will see from beginning to end there is not a single allusion to Red Cross volunteers in it. The National Aid Society, when properly placed under the authority of the Minister for War and duly recognised, becomes for the time as much a part of the medical department of the Army as the combatant volunteers are of the fighting ranks, and the properly accredited members of the society then become entitled to certain privileges, which privileges are laid down in the Convention of Geneva. The real problem which remains to be solved in this country, and which in my opinion ought to be solved without delay, is how on the one hand to preserve the general volunteer character of the National Aid Society, and on the other to consider how it can best be subordinated to the established military authorities, so that there may be no clashing with good order and necessary discipline in time of war; but, on the contrary, efficient co-operation towards the common end in view. It is the same problem that has had to be worked out with regard to volunteer combatants.

The CHAIRMAN: I am very glad Mr. Longmore has mentioned this, for I myself to a certain extent was ignorant of the various details. I understand Mr. Longmore to say that those under the Convention of Geneva must be backed by the Government in order to be recognized by the belligerent forces.

Mr. LONGMORE: Quite so.

The CHAIRMAN: I am very glad these few expressions have shown exactly the *status* of the Red Cross Society when war takes place. We have had a very interesting lecture from Mr. Furley, and the subject is most interesting both to the civil and more especially to the military population of England, who have to suffer during war in this terrible way on the field. The main point I cannot help thinking, is the relief of the wounded on the field; that non-combatants should be attached to each company to carry the wounded from the place where they fall to a place of temporary safety, and then to convey them to hospitals. That is the main point which every General Officer would wish to see carried out in the Army, and these are subjects that are debated and discussed with very great attention by military men. I am very glad that the subject has been brought forward here, and beg to offer Mr. Furley our best thanks for his very interesting lecture.

Evening Meeting.

Monday, May 29th, 1876.

LIEUT.-COLONEL R. J. LOYD-LINDSAY, V.C., M.P., in the Chair.

NAMES of MEMBERS who joined the Institution between the 2nd and 29th May, 1876.

LIFE.

Carington, C. R., Lord, Capt. Royal Horse Guards.
Willis, G. H. S., C.B., Major-General, Unatt.
Aitchison, H. C., Commander R.N.
Wauchope, A. G., Lieut. 42nd Highlanders.
Alves, W. L., Lieut. R.A.

ANNUAL.

Goold-Adams, F. M., Lieut. R.A. Harrison, Wm., Capt. 19th West York R.V.
Smyth, H. F., Capt. R.A. Holt, G. Trefusis, Capt., late Indian Navy.

ASSISTANCE TO THE WOUNDED IN TIME OF WAR.

By Surgeon SANDFORD MOORE, M.B., F.S.S., Instructor, Army Hospital Corps.

My subject this evening is "Assistance to the Wounded in Time of War." The question of how to make adequate provision for meeting the requirements of the wounded of our own Army, in the event of a European campaign, and to which my remarks will chiefly refer, opens up a field regarded at once as so large and so complicated that I feel I owe an apology for presuming to deal with it, in any way whatever.

Since the year 1870-71, when it was my privilege to serve with Mr. Manley's division of the so-called Woolwich ambulance in the Loire campaign, and to be an eye-witness of the prompt relief afforded to the wounded by the excellent system of field hospitals in use in the Prussian Army, I have been deeply impressed with the importance of the subject, so that, on recently being asked by the Council of the Royal United Service Institution to read a paper embodying my views on the subject of help to the wounded, although the time for preparation placed at my disposal was short, I determined to try and do so.

It is very generally admitted that, in all Armies, the most defective portion of the field arrangements, and that which has shown least signs of progressive improvement, is that which concerns the medical service. Nor, in one way, is this altogether a matter of surprise. In the words of Mr. Longmore, "The community at large are deeply interested, when attempts are made to improve the destructive implements of war, and to ascertain the most effective methods of employing them, for it is felt that power as well as protection are involved in their possession, but it is a comparatively short time ago since attention was first given to determine practically the best

"means of meeting the pressing necessities of those disabled by the effects of war, and even during the interval of time which has since elapsed, interest in the question has been limited, with comparatively few exceptions, to the persons officially concerned with the special duties belonging to it." These remarks were originally made with special reference to transport of the wounded, but they apply, with equal force, to all field medical arrangements generally.

It is probably unreasonable to expect people to busy themselves with a subject which affords such dry and uninteresting materials, and which does not press home to them until war breaks out, when, too late, the picture, with all its attendant horrors, is held up for their inspection. The solution of the problem at any time is attended with difficulty; then it is impossible, or well nigh impossible. The question is principally one of men, "How form an adequate reserve of trained surgeons, carriers, and nurses, ready to serve when wanted, and ready to find employment for themselves when their services are no longer required by Government?"

The *personnel* required for attendance upon the wounded in war-time forms a body, whose numbers are largely in excess of those required for the peace establishment. Approximately, more than eight times the peace establishment would not over-estimate the strength of the reserves required to enable the work to be done efficiently; and it will be shown, further on, that it is desirable that all who are intended for this service should receive a course of special instruction such as will fit them for the important duties required of them in campaigning.

The requisite amount of reserve *matériel* does not present nearly the same difficulty as the *personnel* does. In well-organized European Armies the sick and wounded are sent to the rear as fast as possible. In all such evacuations common country carts and waggons, and railway waggons, take the place of specially constructed sick-transport conveyances, the use of the latter being restricted exclusively to the battle field and its immediate vicinity.¹ A slight increase in specially constructed ambulance-conveyances would, however, doubtless be necessary over and above the peace establishment.

To form the reserves and construct whatever proportion of ambulance-conveyances may be necessary requires a certain expenditure—and any Government which undertakes the task of bringing an incomplete medical department up to a war footing must be prepared to incur expense—an outlay, too, for which a return seems so far distant that,

¹ As an instance of evacuation by country carts, I may mention a Prussian evacuation of wounded from Moree to Chartres, at which, by Mr. Manley's orders, I assisted in December, 1870. I brought with me three ambulance-waggons of the National Aid Society; the Prussians had forty and odd common country carts. On the 20th, at noon, we commenced to load our waggons, and took up 260 wounded; with these we marched to Cloyes, at which place we arrived at 2 A.M. on the 21st. The wounded were there placed in the Mairie for a few hours' rest. At 2 P.M. we started for Chartres, which place we did not reach until 6 A.M. on the morning of the 22nd—a distance of not much under sixty-five English miles in less than forty-eight hours, including halts.

to many in peace time, it would no doubt appear to be quite uncalled for, if not unjustifiable; and, although no serious person probably could be found in any country to dispute, for a moment, that the nation is not under an absolute obligation to provide for the wants and proper care of its wounded soldiers, still the fact remains that, from some such cause or causes as are above enumerated, the army medical service in many countries—in nearly all—remains in an imperfect condition, being, from its inexpansibility, quite unable to respond to the calls made upon it in war-time.

The history of international philanthropy has clearly demonstrated that, not only has the defective nature of the official medical arrangements generally been recognised, but that strenuous private efforts have persistently been made to provide a remedy. In 1863, we had National Committees formed for the express purpose of becoming the agents of the public at large for supplementing the regular hospital service in war-time. In 1864 was signed the Geneva Convention, having for its object the neutralization of the wounded of belligerent Armies, and the *matériel* and *personnel* necessary for their care and treatment—a further step in ameliorating the wounded soldiers' condition and materially lessening his misfortunes—and since that date, whenever hostilities have occurred to interrupt the peace of Europe,—in Schleswig-Holstein, in the Austro- and Franco-Prussian campaigns,—the National Committees have irrefutably proved, by their career of usefulness, not only how invaluable their services were on these occasions, but also, in proportion to the amount of work done, the existence of gaps in the official medical arrangements of the contending forces.

In the Franco-Prussian war, in the early part of the war, had the arrangements been satisfactory, Sir H. Havelock would not have had it in his power to write from Pont-à-Mousson, on the 21st of August,—“It makes me sick at heart to see the scenes of suffering that cannot be relieved, first, from want of appliances, next, because surgeons are too few for the work. All the French wounded have fallen into the hands of the Germans. There are actually numbers of wounded, struck on the 16th and 18th, who have only had their wounds dressed on the field when hit, and never since.” Under the Geneva Convention every facility was given for a portion of the French medical service being left behind to look after the French wounded who fell into the hands of the enemy on this and other occasions. Two circumstances may have assisted in causing this omission—one, the now notorious state of ignorance of the Officers and men of the French Army concerning the purport, or existence even of the Articles of the Geneva Convention, and the other, a short-handed medical service. Both may have had a share in its production, but I am inclined to think the latter.

Even the Prussians, with their wonderfully arranged organization, succumbed here and there to the press of difficulties. Medical aid was wanting in the first battles, although, at the beginning of the war, they had enrolled 2,700 surgeons, and provided hospital effects for 40,000 beds.

At Saarbrück the natives, for two whole days, drew the wounded from the field in country carts, and brought them to their homes.

After Weissembourg, some of the wounded lay for two whole days where they fell, and in Remilly, writes M. Pirogoff, a street was pointed out in which 1,000 wounded were laid down, having been travelling thither for two days and two nights from Gravelotte. "From the scene of action at Metz," the same writer remarks, "3,000 wounded were sent to Gorze, where Professor Langenbeck with four assistants was, and such was the pressure that they could only receive the most necessary dressing, prior to being passed on to places of greater accommodation."

The medical service of the Armies of Europe when in the field is conducted upon one or other of two general principles. One principle, the more modern, is the principle of separating the wounded from the moving force, then isolating and distributing them. For this, a system of field hospitals is requisite. The other principle is the principle of conveying the wounded in company with the moving force. For this, a large ambulance transport is requisite. The former is the one on which the Prussian medical service is conducted, the latter is the one on which the British medical service has hitherto been conducted, and which, to a certain extent, in so far as one can judge from the autumn manoeuvres and in the absence of any late experience of British troops in a European campaign, is interwoven with our military system in the present day. For example, we read in accounts of the Peninsular campaigns that it was the duty of the principal medical officer to see that, however short a time a battalion or corps rested in a place, a regimental hospital was established; indeed, as it carried with it medicines, bedding, stores, and all the materials of a hospital, a regiment might be said to have its hospital established even on the march. It was frequently established in the face of an enemy, and nearly within reach of his guns. By this system as few men as possible were separated from the moving force, and these, the most severely wounded only, who were sent back, on any available transport, commissariat carts, bullock carts, &c., to the nearest town where a general hospital was established. An attempt was not made, at any time during the Peninsular war, to establish field hospitals, by which means the principle of separation can be effected. In the Crimean war there was no opportunity of introducing a system of field hospitals, for then the Army was stationary, or nearly so, and close to its base. In India, the transport, &c., is so different to that required at home, that the methods in use there cannot be applied to European campaigns, while for each of our little wars special arrangements require to be made.

An American surgeon of great experience remarks, "By a rapid dispersion of the wounded the fighting force is less diminished than by any other plan. Fewer combatants are withdrawn from their proper duties to attend to their sick and wounded comrades. The number of sick and wounded engaging in fresh active service will be greater by this arrangement than by any other, provided that there be such an enforcement of discipline in the base hospitals as

"will ensure the prompt return of convalescents, and large accumulations of hospital supplies with the Army become superfluous. Lastly, the most important consideration is the most obvious, the distribution of sick and wounded prevents the generation of those pestilences that are the greatest scourge of armies. The sick and wounded avoid infecting each other, and those who are well escape contagion."

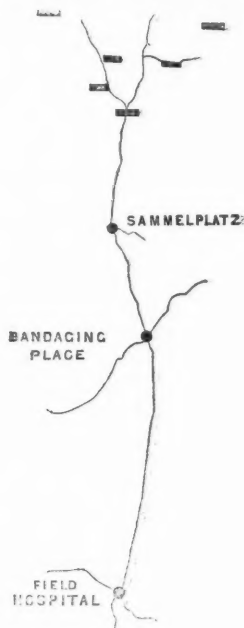
The converse may be expected where accumulations of the sick and wounded are formed and carried with the marching columns. The presence of such accumulations will depress healthy comrades, and may even influence the progress of the campaign, for advantages attained by a rapid onward movement of the force cannot be expected to accrue while it remains encumbered with long convoys of sick and wounded. The enormous number of ambulance-waggons, vehicles specially constructed for sick-transport, and of little use for other purposes, required when this principle is adopted, is another very serious objection. For example, in the British Service, 27 ambulance waggons are required per brigade, but only six per division of two brigades in the Prussian Service, or an economy in these vehicles of about 90 per cent. The six Prussian waggons are supplemented by four movable field hospitals (800 beds), with a reserve of two field hospitals (400 beds), which afford temporary ward-shelter to the whole of the wounded who are not able to make their way further to the rear, and until such time as they can be removed, while the 27 British waggons are supplemented by two field hospitals, with a reserve of one and three-quarter field hospitals, in which only the very severely wounded are afforded ward-shelter until their removal to some garrison hospital in towns in the rear, while the remainder of the wounded are carried on with the moving force.

And at this point I would ask permission to describe briefly the Prussian arrangements for the care and removal of the wounded, and for this I shall borrow largely from Dr. FitzGerald's excellent report on the subject. I am no advocate for Prussianising our medical department unless it can be clearly demonstrated that we should be decidedly benefited by the change. Personally I believe the Prussian system could be modified so as to be made applicable to the British Service. Certain I am that on the whole it worked remarkably well in 1870-71. Its sanitary detachments are spoken of by both Prussian Officers and men in the very highest terms of praise, and are of such recognised proved utility that their number is to be considerably increased for the future.

A Prussian battalion takes the field with a medicine cart, and a few stretchers, and a proportion of surgeons and auxiliary bearers—two of the former and four men per company of the latter. The battalion carries with it no regimental hospital equipment, nor any equipment for opening a detachment hospital.

In minor actions, first assistance to the wounded is given by the battalion surgeons and auxiliary bearers. Both advance with their battalions under fire, and tender what aid they can to those who fall. The medicine cart and stretchers are advanced as far as possible, and

"bandaging places," as shown in the diagram, are formed just beyond rifle range under the orders of the Officer commanding. The auxiliary



bearers then carry back the severely wounded, who are unable to walk, on their stretchers to the bandaging places. Care, however, is taken that the bearers do not congregate there, but return forthwith to the front as soon as their stretchers are unloaded. The senior regimental surgeon conducts these "bandaging places." Injuries are there examined, dressings applied, and the necessary surgical operations performed; and, moreover, measures are taken for the removal of the wounded, when dressed, to shelter, where they are to receive such further attention as they may require until removed to the etappen or field hospitals. For these slight engagements, the ambulance waggons are not brought up, nor are the field hospitals unless by the special requisition of the General commanding the division.

If the engagement becomes general, other arrangements than those above enumerated are made. In such a case the sanitary detachments and field hospitals, which follow the advancing Army as closely as possible, are then thrown forward, the sanitary detachment to replace or supplement the auxiliary bearers in carrying the wounded off the field, and the field hospitals to provide the temporary ward accommo-

dation for the wounded, which it is absolutely necessary for them to have until their further removal to base hospitals in the rear.

The composition of a sanitary detachment is shown in the table below.¹ It is made up of a certain fixed proportion of ambulance-carriages and store-waggons and ambulance equipment, as well as surgeons, bearers, nurses, and Train soldiers, the duty of the latter being to act as grooms, drivers, &c. There are three sanitary detachments to each Army-Corps. One is permanently attached to each of the two infantry divisions, and the third is held in reserve at the disposal of the General commanding.

To provide ward-accommodation for the wounded forms no part of the functions of the sanitary detachment. Its duties simply embrace the formation of bandaging places, and the collection and removal of wounded from the field of battle; and on the forward movement of the Army after a battle, it, or at least one section of it, quickly follows its division. The ambulance waggons are at no time used for the conveyance of sick or wounded on the line of march, or in camps, nor are they ever employed in evacuations of sick or wounded.

The Divisional Commander issues the order for the movement of the sanitary detachment into action, and fixes upon the points where the bandaging places shall be established, appropriate buildings being utilised if such exist, if not an operating tent is pitched in the most sheltered situation. These are to be denoted by the Red Cross Flag, and after dark by a red lantern.

Here the ambulance surgeons and a proportion of the regimental surgeons are assembled, the store waggons unpacked, chloroform and dressings got in readiness, and the arrival of the first party of wounded from the fighting line awaited, these soon begin to arrive, those able to walk first, those severely wounded carried by the bearers on stretchers. In the mean time, while this is being accomplished, the ambulance waggons and bearers, led by their Officers, are to be pushed forward by the best road available to the sammelplatz (shown in the diagram), the furthest point to which it is considered

¹ *Sanitary Detachment.*

<i>Matériel.</i>	<i>Personnel.</i>
2 sanitary waggons.	1 first lieutenant.
2 baggage waggons.	1 second lieutenant.
6 ambulance waggons.	1 paymaster.
42 stretchers.	1 sergeant-major.
3 wheeled stretcher-supports.	12 under officers.
	12 corporals and second-period men.
	124 sick-bearers.
	1 first staff surgeon.
	1 second staff surgeon.
	5 assistant surgeons.
	1 field apothecary.
	2 upper hospital attendants.
	6 hospital attendants.
	8 hospital orderlies.
	3 train corporals (mounted).
	3 train under officers (mounted).
	23 train soldiers.

expedient to bring ambulance waggons. There the waggons are to be drawn up and reversed, and the bearers hurried forward by their Officers to search for and collect the wounded. The surgeons at the bandaging place are formed into three divisions by the Directing Surgeon.

The *first division* regularly examine all who arrive. Those with slight wounds are dressed and sent further on. The mortally wounded are placed aside in a sheltered spot, as further removal would augment their sufferings.

The *second division* apply difficult bandages, plaster of Paris, dextrose, &c., for fracture cases.

The *third division* undertake the performance of all capital operations which must be performed without delay. A "diagnosis tablet" is then attached to each man's clothes, recording the description of the injury and other particulars, which are of great utility in preventing repeated examinations by successive surgeons, into whose hands he may pass, and facilitates the distribution of the wounded in directions and to distances suitable to their injuries.

The Directing Surgeon then settles the further distribution of the wounded. The slightly wounded are sent to the etappen hospitals, the remainder to the field hospitals; the most severely to the nearest, and those able to walk on foot; those unable to walk, by the ambulance waggons. This course having been followed, the sanitary detachment is ready to march after its division. If a retrograde movement has to be made, the Directing Surgeon arranges who of the medical officers and subordinates, as well as what stores, shall be left behind with the wounded.

To afford the requisite temporary ward-shelter, there are twelve field hospitals to each Army Corps, four attached to each of the divisions, and four held in reserve. Each possesses its fixed establishment of surgeons and subordinates, stores, transport, and equipment, and being extremely movable, can rapidly follow the advancing Division or Army Corps. These field hospitals are opened in towns, villages, and detached buildings in the vicinity of the operating force. As few as possible are brought into activity at a time, the rest are kept packed and ready for a sudden move. When a general engagement is expected, farm-houses, &c., are selected, as near the bandaging places as possible, and are made comfortable, as the wounded may have to be detained there a few days or longer, every effort being made to transfer them to the reserve hospitals as fast as their condition admits. When a field hospital cannot be evacuated, it ceases for a time to belong to its own Army Corps, and is associated with the etappen system. As soon as it is evacuated it is free to move to rejoin the corps to which it belongs. The etappen hospitals, to which allusion has been made, are situated along the line of communications, about 100 miles apart on lines of railway, or 20 miles apart on the etappen roads, and form resting-places for invalids returning home. The reserve hospitals are formed for patients evacuated from the field- or etappen-hospitals, and exist during the whole time of the war.

Under this system, during the removal of the wounded man from

the place where he falls to his own town hospital in Germany, his safety is intrusted to two distinct classes of subordinates, and I desire particularly to draw attention to this division, as I am convinced that therein lies the key to any thorough plan for assisting the wounded in war time.

The two classes are—

1. Bearers.
2. Hospital-orderlies, or nurses.

The duties of bearers may be summarized thus: they search for the wounded during and after an engagement, and administer water or other refreshment to them. They examine the whole of the fallen, and separate the living from the dead. The living are then removed either to the sammelplatz, or if there are no ambulance-waggons available there, to the nearest bandaging-place. They assist in loading the waggons and wheeled stretchers at the sammelplatz, and immediately return to the front to search for other wounded. Four bearers form a stretcher-party, two to carry the stretcher, and two to act as a reserve, and carry accoutrements, packs, &c., not only those belonging to the wounded man, but any stray ones lying about the field. Cases of emergency, such as hemorrhage, &c., are to be treated by the bearers, but only in the unavoidable absence of the surgeon; and, lastly, the bearer company is required to find a guard for its stores and waggons on the line of march, and at the head-quarters of the sanitary detachment.

For the performance of such duties as these it will be obvious that skill, powers of endurance, intelligence, and courage require to be combined in no small degree in one and the same individual, but above all, that bearers must be disciplined, not necessarily highly trained, troops. The duty is at times dangerous and fatiguing in the extreme. Again and again has the bearer to cross and recross the zone between the fighting line and the sammelplatz or bandaging-place—the zone in fact of rifle fire—it may be each time in doing so exposed to great risk. I think, therefore, it will be readily admitted that no other than a corps with a distinct military organization need attempt to discharge such duties, and in such a situation. It requires Officers and non-commissioned officers, who themselves understand the details of the work the bearers will be called on to perform, and who appreciate the necessities they will have to meet, to command, and soldiers, masters of the details, to execute the commands. A body of trained civilians may be perfect in every respect but the one, but without strict rules of discipline must speedily become a disorganised mob on the battle-field. I do not, however, wish to be understood to say that under no circumstances could trained civilians be made to supplement the military establishment. Instances must of course again occur when after the fighting has terminated, the military establishment finds itself unable to cope with the large numbers of wounded still remaining on the field; then, of course, there would be nothing to prevent the employment of trained civilians to any extent that might be thought necessary. But these instances are exceptional, and besides there must always be a difficulty in assembling a body of civilians, whose presence for all other purposes would be positively

hurtful in the front, and in timing them to arrive on the battle-field exactly when their services were most needed.

That the work the bearer has to perform is sufficiently irksome and fatiguing, and demands considerable powers of endurance, will be manifest from a simple calculation, which I extract from an excellent translation of Surgeon-Major Alcock's. For each severely wounded man four stretcher-bearers are required in the Prussian service, and as the sammelplatz, or point where the ambulance-waggon are drawn up, cannot be established nearer the fighting line than half a mile, it follows that to bring in ten men the four bearers must walk ten miles, and to bring in 1,000 men will therefore require 400 bearers at the lowest calculation, and this, too, assuming the most favourable conditions, viz., that the line traversed between these two points is the direct line, and that the bearers are not obliged to turn aside through unevenness of the ground, &c. The same writer, referring to the earlier battles of the war, makes the remark:—"In the Prussian service, as only 400 bearers were allowed to each Army Corps, it is easy to understand why the wounded lay whole days and nights upon the field of battle." This the Prussians intend to rectify, as has already been mentioned, by increasing the number of sanitary detachments.

Bearers are selected in the following manner in the Prussian service: two men per infantry or Jäger company of two years' service are trained annually during the winter months as bearers, and out of these the sanitary detachments are formed in the event of war. The auxiliary bearers, to the number of four men per company are trained in the same manner and at the same time. On the termination of the period of training the bearers return to their duty in the ranks of the army.

I would next request to be allowed to glance at the training given to the Prussian bearer. It is partly theoretical and partly practical. The *theoretical* includes a slight knowledge of such subjects as anatomy, gun-shot wounds and their immediate attention, of appliances used in dressing, the mode of distinguishing real from apparent death, &c. The *practical* includes exercises in loading and unloading sick-transport conveyances, stretchers, waggons, &c., in marching with them, and handling them generally.

The period of training does not occupy above a month. In the following spring or summer, bearers trained during the winter are assembled with the Train for ten days' exercise. A sanitary detachment is formed, and marched out into the country, and various situations selected to represent the scene of a general engagement. A party of men is detailed to represent the wounded requiring carriage; these are sent on in front, and distributed in a lying-down position. To the coat of each a small label is attached, and on this label written the description of wound the man was supposed to have received. The sanitary detachment is then halted and waggons reversed, stretchers and bandages, &c., got out, the bandaging-tent pitched, and the bearers advanced with their stretchers to the wounded, to dress them, and bring them in to the waggons. At the bandaging-tent the injury is examined by the surgeon, and if nothing further is required, the wounded are placed in the ambulance-waggon, ready for further

removal to the rear. These exercises are conducted by the garrison medical instructor. It is the opinion of an excellent judge of these matters "that the practical application of such exercises on a battle-field would contribute towards saving many lives that would otherwise be lost, but especially would be the means of preventing aggravation of fractures and other injuries, that would invariably suffer under like circumstances to such an extent as to render all attempts at conservative surgical practice unavailing, if no system of the kind were followed, nor corresponding aid available."¹

Returning to the *personnel*, to whom the safety of the lives of German wounded is intrusted in war-time, the second class comprises the hospital orderlies, or nursing staff. These men are employed solely in the hospitals, as ward attendants on the wounded; they form an essential part of the staff of all reserve hospitals, of the *etappen* hospitals along the line of communications, of all field hospitals, and to a less extent of the sanitary detachments, being, in the latter case, intended for duty at the various bandaging places. Bringing in the wounded from the battle-field on stretchers, &c., forms no part of their functions, nor are they ever employed on such duty; their special province is nursing: at the door of the bandaging tent their duties begin, and, generally speaking, those of the bearers end; while from this outset, until the wounded soldier's discharge from hospital—be it field, *etappen*, or reserve hospital, or death—the military nurse is called on to perform certain special duties, requiring no small amount of special knowledge, dexterity and skill, and the trustworthy execution of which is of such absolute necessity and vital importance to those most concerned. For example, at the bandaging places they assist the surgeons in dressing the slightly wounded, in applying such difficult bandages as plaster of Paris, dextrine, &c., in cases of fracture, in capital operations, and in attaching and making out "diagnosis labels"—in short, all subordinate duties are assigned to them by the surgeon. They have, besides, to assist in moving the wounded into the ambulance waggons for further distribution to the rear, in loading railway hospital trains, in packing and unpacking hospital equipment, and in pitching and striking the bandaging tents. Similarly in base hospitals, all the subordinate duties are assigned to them, so that they thus become very valuable aids to the Medical Department.

It must be manifest that, for the efficient discharge of these duties, very high class men are required—steady, intelligent, and trustworthy, and well versed in the special duties they will be called on to perform—if not, the wounded must proportionately in some ways suffer. As to whether hospital orderlies should be soldiers or civilians; to my mind, if forthcoming, no nurses should be employed on service other than military nurses; but, at the same time, the same necessity for a distinctly military body does not exist in this case as in the case of bearers; bearers are employed exclusively in the midst of active operations, whilst only a portion—a small portion—of the nursing

¹ Prof. Longmore.

staff is there employed, the remainder being distributed along the line of communications, where there is comparatively little danger to be encountered or risk to be run, and therefore not so much necessity for strict discipline. To be able to place dependence, however, upon that portion which is employed in the field hospitals and at the bandaging places demands a military organization; while civilians, with some distinctive dress, and with habits of obedience to the orders of superiors, and who had received the necessary training beforehand, might be employed in such situations as intermediate and base hospitals, and in railway hospital trains.

The course of training for the Prussian hospital orderly or military nurse embraces all these subjects, theoretical and practical, required by nurses in civil hospitals, to which, however, is superadded such knowledge of military medical subjects, with particular reference to field hospital equipment and sick-transport conveyances, as will fit them for the exigencies of campaigning.

No fixed period is laid down for the course of training of a Prussian hospital orderly, but as the range of subjects is wider, and the ward training requires time, it considerably exceeds the period required for training a bearer. To train a nurse in civil hospitals occupies from six months to one year and a half. I observe that the latter is the probationary period laid down in Miss Nightingale's recently proposed scheme for establishing a training school for district nurses in London. Probably from six months to a year would be the general average time required. But under no circumstances should the course occupy less than four months, which is the least time it is possible for even intelligent men to become thoroughly acquainted with their duties—a conclusion which I am warranted in drawing from the experience already gained by some hundreds of men who have passed through my hands at the Army Hospital Corps Training School. The necessity for keeping up a large reserve of orderlies in peace time will therefore be at once obvious—a necessity which, owing to the longer probationary period, is even more pressing than keeping up a strong reserve of bearers.

A word as to my professional brethren in the Prussian medical service.

The Prussian surgeon is taught to consider himself before all things a soldier, and his avocation as one to be practised under fire; and as a proof that such is the case, it is mentioned that no less a number than 80 Prussian surgeons fell in battle in the Franco-Prussian war of 1870-71. On first entering the Service, he is drilled on foot and in the riding school for a period of about six months, and this drilling goes on hand-in-hand with his military medical studies. At the termination of this probationary period, he thus not alone becomes disciplined himself, but has learnt the art of dealing with the disciplined—no small advantage in itself, a knowledge of the ways and wants of soldiers being absolutely necessary for him—and at the same time acquires that knowledge of his speciality by which alone subsequent success can be attained in the practice of military sanitation.

I am aware that there are those who would have us believe that civil

surgery and hygiène are one and the same thing as military surgery and hygiène, and that those who practise the former may, without further training, devote themselves to the latter. I for one, with all deference, however, hold a different opinion. Civil and military practice are the same so far only as their principles are concerned. The principles of both are the same, but the mode of application is modified. The civil surgeon, who has not studied military sanitation in all its branches, will find this to his cost, if he arrive for the first time at the seat of war, and is placed without an experienced adviser in a position of responsibility. He, without special training, can have no conception of the countless extemporaneous expedients that are to be employed for the relief of the wounded when the usual resources fail. His first experiments will possibly be a series of mistakes, which may or may not be irretrievable, while, if a thoughtful observer, the remainder of his time will be spent in improving or adding to the store of special knowledge, with a full complement of which he should have set out in the first instance. For example, take the one case of plaster of Paris splints, so much used in transporting wounded, and so little in civil life; although this might appear a simple apparatus to apply, I would strongly recommend those who are not adepts in its application, and who have not treated cases of fracture with it before, to make their first experiments on gun-shot fractures.

But although the Prussian surgeon is formed in this stern mould, which fits him to exercise powers of command over hospital subordinates (and in which he differs so materially from the surgeons of our own Service), and which powers have, since the war, been considerably added to, his position is not a satisfactory one on the field of battle. He is shorn of responsibility often when the interests of the wounded can ill afford him to lose it.

"Every one will probably be willing to admit that the duty of clearing a field of battle is of vast importance, and that it may be accomplished with rapidity and methodically, the general direction should be under one head, responsible only to the General commanding for its efficient performance. It seems to be equally clear that the responsibility of this strictly professional duty should be borne by the principal medical officer of each division, adequate means being placed at his disposal for its proper execution. These means comprising sanitary detachments and field hospitals or other ambulance train, which should be commanded by its own officers, but at the same time with such regulations as will enable the responsible officer to direct the employment of the men and conveyances wherever and in whatever way they are most likely to serve the interests of the wounded."

But in the Prussian Service this course does not obtain—the General, one would think burdened with quite enough work in directing the movements of his division, without requiring to work out details which might with propriety be entrusted to responsible subordinates—in this case the principal medical officer—takes the general direction out of the principal medical officer's hands, selects the sites for bandaging places and for field hospitals, and controls the move-

ments of the sanitary detachments, with what result can easily be surmised. Sometimes the sanitary detachments or field hospitals are moved to a part of the battle-field where their services are least required, thus throwing double work on the bearers; and sometimes the General, occupied with more pressing work, forgets all about the sanitary detachment, and leaves it standing idle, when it might be actively employed elsewhere. The remedy for this is easily supplied. Give the general direction of this professional duty to one officer, who has nothing else to think of, and hold him responsible for its execution; and I have no hesitation in saying that, if the right man be in the right place, the duty would be more efficiently done than under any other plan. This certainly is one point where the Germans have systematised to too great an extent.

On the other hand, in the American war of the rebellion, where another course was pursued, and where the commanders recognised and practised the principle of holding the chiefs of the medical department directly responsible for the execution of all field medical duties, investing them beforehand with the requisite authority, it is very remarkable how small was the mortality, much smaller than that recorded in any previous wars; and that the details were efficiently executed was made manifest by the unanimity which prevailed in the many favourable criticisms which appeared after the war, and since that time. As it bears on the subject in hand, I make no apology for quoting a short extract, showing the success of the system pursued, from Circular No. 6, of November, 1865, of the American official circulars. "Never before in the history of the world was so vast a system of hospitals brought into existence in so short a time. Never before were such establishments in time of war so little crowded or so liberally supplied. They differed, too, from the hospitals of other nations, in being under the command of medical officers. Instead of placing at the head of establishments intended for the treatment of disease and wounds, Officers of the line, who, whatever their other accomplishments, could not be expected to understand the requirements of medical science, and who, with the best intentions in the world, might seriously embarrass the action of the surgeon, as was sadly the case in the Crimean war, and as has since been the case in the English hospitals, our Government, with a wiser discretion, made the surgeon the commandant of the hospital, and thus, while holding him responsible for the results of its management, put into his power to do much to make those results favourable. The medical staff can point with pride to the consequence of this liberal course. "Never before in the history of the world has the mortality in military hospitals been so small, and never have such establishments so completely escaped from diseases generated within their walls."

I fear I have dwelt on this well-devised and elaborate system of the Prussians—on its advantages and drawbacks—at a length which must have severely tested the patience of my hearers, but not at greater length than its importance demanded, for I believe it is a system which is not generally known, and that it forms the nearest approach to solving the difficulty of how to make adequate provision for assisting the

wounded in time of war in Europe. When we begin to compare the Prussian system with our own, we find that, in the British service, no distinction seems to be drawn between bearers and hospital orderlies—all hospital attendants are alike styled Army Hospital Corps men; and, in reality, our Army Hospital Corps men are trained to act in either capacity—either as bearers or nurses. Some therefore on service would act as bearers and some as orderlies or nurses. But, from what has been already stated, this is clearly a wrong principle to go on. A brief course of training in rudimentary subjects suffices to turn out a bearer. To employ a man, therefore, in the capacity of bearer who has received the complex education required by an orderly is a mere waste of power—a course which may not inaptly be compared to cutting blocks with razors. The orderly's education fits him for a higher sphere, for the performance of a higher class of duties; and besides, being a much more costly individual to the State, from his prolonged probationary course than a bearer, he is more difficult to obtain, or replace, and in war time the extravagance becomes all the more apparent, in any Army like ours, which is recruited solely by voluntary enlistment.

Under the mobilization scheme which was published in the Army List for August, 1875, it appears that our active Army, which is intended for service in the event of invasion, or in a European campaign, is to comprise eight Army Corps. At the same time a fixed medical department was laid down for each Army Corps, the composition of which is shown below.¹ Amongst other items, it will be seen that 2,195 Army Hospital Corps men is the number required for an Army Corps on a war footing, 1,000 being stated as being for sanitary detachments, and therefore, I presume, to act as bearers, and the remainder to act as hospital orderlies. I believe I am correct in saying that the total existing strength of the Army Hospital Corps does not exceed 1,500 men; not sufficient, therefore, for supplying even one Army Corps. This being the case, it may not be devoid of interest to inquire by what means the present strength of the corps can be supplemented, so as to bring the total up to 16,000 men, the total number required at 2,000 men per Army Corps. A variety of suggestions have been advanced, from time to time, with a view to solving this particular difficulty. I propose now briefly to review the more prominent ones. It has been proposed to supplement the corps—

1. By increasing its existing strength to that required.
2. By employing bandsmen.
3. By employing untrained combatants from the ranks.

As to the first plan, viz., increasing the existing strength to that required, it certainly would meet the difficulty in one sense, but only by creating a more formidable one. In what manner could the excess (about 13,000 or 14,000 men) over and above the peace establish-

¹ *War Strength of Medical Department with an Army Corps.*

Personnel.	Medical officers	267	Matériel.	Ambulance waggons . .	268
	Other officers	30		G. S. waggons	150
	Army Hospital Corps . .	2,195		Draught horses	418
	Drivers	568			

ment of military hospitals be employed in peace-time. There would be no field for their employment in hospitals, or in acting as bearers. The institution therefore would not be an economical one; besides, those who have entertained the plan have for the moment forgotten the mode in which the Army Hospital Corps is recruited. Its ranks are filled by volunteers from the ranks of the regular army. Government would not unnaturally be very unwilling to surrender so large a proportion of fighting men as 14,000 or 16,000 for non-combatant duty. In brief, I do not believe that any government would entertain the proposal for a moment.

Proposal No. 2, employing bandsmen, has very recently been revived in the columns of an influential medical journal, for whose views I have the highest respect, but with whom I must beg to differ on this point. If bandsmen are taken to supplement the Army Hospital Corps, "it must be remembered they have received no training either to act in the capacity of bearer or nurse, and, even if trained, have no organization which would insure the duty being performed." Besides, it is highly improbable that regimental officers would quietly submit to their bandsmen being taken away for periodical training, which would be necessary if this proposal were adopted, or for service with sanitary detachments, or for nurses in field hospitals—enlivening airs which would make the men step out and keep their spirits up, will be considered, and very justly, much more the province of the bandman on active service by the vast majority of officers. A sort of tradition, I am aware, exists in the army at large, that bandsmen are the men who may have to perform the duty of bearers in action, and they certainly appear to have been so employed in the Peninsular war, but I have been unable to find any regulation which directs their being so employed on service. But even if it be decided that they are to be so employed with a view to supplementing the Army Hospital Corps, it will be found that there is only a sufficient number of them partly to accomplish this end. If the twenty-one infantry regiments in an Army Corps supplied a quota of say 30 bandsmen each, this would give a total of 630 men per Army Corps, while a sum total of 2,000 and odd is required per Army Corps. This plan therefore is a notoriously inefficient proceeding.

As to the third proposal, should untrained combatants quit the ranks to perform the duty? This certainly has been, for the most part, the way in the British service in which it has hitherto been done, but it is open to several objections. The inevitable consequence must be an aggravation of the injuries of the wounded, and a prolongation of their sufferings; besides, a still graver objection arises from the prejudicial effect of such a plan upon discipline. But on this point I cannot do better than quote the words of Lord Strathnairn, when Commissioner at the French head-quarters in the Crimea: "Transport of the wounded from the field of battle to a good ambulance, besides satisfying the rights of humanity and sustaining that spirit of confidence in the soldier, which, like discipline, should never leave him, has another admirable effect: it obviates the incalculable disadvantage of troops engaged in action leaving their ranks for the purpose of

"carrying off the wounded. Certainly good soldiers have no other motive in leaving their ranks for this purpose than sympathy for a suffering comrade. But, on the other hand, all know that in a field of battle there are at times men of a different description, who either seek rest, or refreshment, or are as desirous of placing themselves as their comrades in a place of safety, and four or five such men are seen assisting a man for whom one attendant would be sufficient. Nothing is so likely to insure a reverse in action as the want of confidence and the gaps caused by men leaving their ranks to carry away the wounded, which is most practised when it is most prejudicial, at the time and places when and where the enemy has caused the most casualties, and, consequently, when every available man should be present and ready to fill up broken lines, and assist by his concurrence and example in resisting or attacking the enemy."

Each of these plans for supplementing the Army Hospital Corps proving impracticable or objectionable, there is but one approximate solution of the difficulty possible, viz., to draw on the auxiliary forces (the Volunteers) for the strictly military portion of the *personnel* required, and on the National Aid Society for the civil portion. This idea in its entirety has not originated with me, it has been advanced by Colonel Loyd-Lindsay, Professor Longmore, Major Burgess, and several veteran philanthropists; but so far as I know has never gone beyond the shape of a suggestion.

The regular forces contribute their quota to the Medical Department in the Army Hospital Corps, and as the Auxiliary forces now form a component part of the military system there surely can be no valid reason why they should not contribute theirs. Volunteers, from their general average intelligence being greater than that of Militiamen, would be a more suitable material to form bearers out of. I, therefore, name them. There are 1,747 companies of infantry Volunteers; if two men per company, strong, active, intelligent young men, of not less than two or three year's service as Volunteers, volunteered for this duty and underwent the necessary training for one month, at the end of that time the country would have 3,494 Volunteer bearers thoroughly qualified, and in every respect ready to take the field to act in that capacity. At the end of two months, if two more men per company were trained, twice this number of bearers (6,988), and at the end of three months, with six men trained per company, we should have 10,482 bearers—a supply more than sufficient to furnish bearers for our eight Army Corps, even if these were all mobilized at one and the same time. The only outlay required to obtain these 10,000, or even a larger number of bearers, would be that necessary to defray the expenses of a medical instructor (with a few Army Hospital Corps subordinates to assist), one of whom should be sent to the head-quarters of each Army Corps, with all conveyances and the apparatus necessary for him to commence the moment his classes were formed. Volunteer and other buildings would possibly be lent the Government for the exercises, &c.; while the men were being trained the exercises might then count as drills. On the quota of men for the station being trained, the instructor would be

directed to pack up his kit and move off to some other station, there to begin his classes and so on, moving from place to place until the entire number of Volunteer bearers for the Army Corps was trained. A proportion of Volunteer Officers and non-commissioned Officers should be trained at the same time, so that they would be ready to take command of the Volunteer sanitary detachments when these were formed on mobilization. To complete and perfect the training, all should be assembled for ten days' exercises in spring or summer, or oftener if found necessary.

A code of regulations for Volunteer bearers, defining their duties, and organization, and relation to the Army at large, would be all that would be required to make the movement a success.

This, of course, is assuming that the proposal were congenial to the temper and spirit of the Volunteer body. I, myself, believe it would. The Volunteer cannot hope to serve the cause of patriotism by evading any of the liabilities of his position, nor do I believe that he would be found unwilling to undergo any of the requirements physical or moral, which, in a state of invasion or general European war, might in this way, or in fact in any other way, be imposed on him.

Moreover, the employment of Volunteer bearers might not necessarily be confined to the seat of war. In peace-time such a body could give conclusive proofs of its utility at railway or factory accidents. A telegraph sent from the scene of a collision, for example, to the nearest "volunteer bearer" station, would bring a bearer party, with stretchers and dressings complete, by the next train, who would systematically set to work to dress the wounds and clear away the wounded in a pre-eminently satisfactory manner, such as unskilled labour could never hope to approach, or to attain to.

With regard to the 568 drivers required per Army Corps on mobilization to drive ambulance waggons, &c., these might in some similar manner be obtained from either Yeomanry or mounted Volunteer regiments.

Such is the plan by which I assume we could supplement the medical department of eight Army Corps, with the military increment required to act as bearers.

As for the increment, which may either be military or civilian, viz., surgeons and orderlies, or nurses, when we come to enquire how it can be provided, a problem of much greater difficulty is presented. A great part, however, of this difficulty may be removed by a pre-concerted arrangement with the National Aid Society. One function of this society might be to enroll, and where necessary, to teach, a staff of nurses and surgeons, who would enter into an engagement to serve either at home or abroad in the event of an European campaign, and who could be depended upon to fulfil their engagements; and as a test of the vitality of the engagement, they might from time to time be called on to serve with Army Corps on mobilization, or during epidemics, etc. But at the same time it should be distinctly given to be understood by these agents of the society that on their arrival at the seat of war, it was the intention of the society to hand them over to

the General for employment under the Chief of the Medical Department with the force in such situations at the base, or along the line of communication, as their services might be required at. I do not attempt to discuss details of how this could be done, for I am not aware of the resources at the command of the society; but of this I am convinced, that no more signal service could be rendered the nation than this very one to which I have been alluding. Material aid in time of war, it appears to me, is quite a secondary consideration for the society, it is not so much stores as men that are wanted: money can be made to purchase stores, but it takes time as well, to make orderlies and surgeons; and if the Franco-Prussian war be taken as an indication of the suddenness and rapidity with which wars in future will be commenced and conducted, there will not be time when once war has broken out, to organize the Medical Department for the force taking the field on its proper footing.

A reserve of some 1,000 surgeons and 8,000 orderlies or nurses is required for our eight Army Corps on mobilization, and I candidly confess I am unable to suggest any other mode by which these numbers could be obtained economically.

Although I so strongly advocate the formation of a reserve of orderlies and surgeons by the National Society, I would, moreover, suggest the inexpediency of small flying ambulances being sent, with roving commissions, to the seat of war by it. These may or may not be useful, and in the majority of instances, if the itinerary be closely examined, it will be found that the "marching" days are ten times as numerous as the "working" days. In short, I question their utility. They are likely to hinder the movements of troops, and to embarrass baggage masters and etappen commanders. I am aware that Mr. Manley's division of the Woolwich ambulance has frequently been pointed to as illustrative of the success of such small ambulances, but it must be borne in mind, in connection with this, that Mr. Manley, in addition to his other qualifications, was an Officer of great war experience, and his subordinates disciplined soldiers, so that his ambulance was essentially a military ambulance, which contributed far more to its success than either its independence or compactness.

The disorder in the administration of the volunteer ambulances of the French, which were purely civil institutions, is experience of great value, if it prevents a repetition of this kind of mistake on the part of National Societies. For instance, the chief of the 5th French ambulance writes:—"I might endeavour to show the improvements of various kinds of which the volunteer ambulance corps are susceptible. I shall, however, not go into details, as I believe that civil ambulances, so far as battle-fields are concerned, have played their rôle, and that rôle is finished." Again, the chief of the 6th ambulance writes:—"The sanitary service of the Army should have an organization wholly military, and in no way civil, upon the battle-field." The thirteen volunteer ambulances of the French National Society, having been found wholly incompetent, were disbanded in October, 1870.

I have time to mention only one other matter which might engage the

attention of the National Society, that is, the adaptation of railway waggons for the conveyance of wounded. Railways are of great value for removing wounded. The advantages offered by their use may be thus summarized :—they enable the active part of the force to be rapidly disencumbered of its wounded, and convey the ineffective soldiers to fixed hospitals, remote from the seat of war. A permanent halt can then be made in these situations, until recovery takes place. This expedites recovery, and sends men quicker back to the ranks for duty. Besides, railways assist in the dispersion of the wounded, and so diminish the risk of epidemics. And, lastly, they tend greatly to do away with the necessity for intermediate hospitals on the line of communications—institutions which are costly to maintain, and too often hiding-places for idleness, as was the case in the Peninsular war.

On British railroads there are three sorts of carriages which can be utilized for the purpose of transporting severely wounded, requiring the recumbent position :—

1. Goods waggons.
2. Second-class passenger carriages.
3. Specially constructed invalid carriages.

There is only one example of the class of invalid carriages in existence in England, as far as I am aware. It is employed, on the arrival of the Indian troop ships, in conveying invalids requiring the recumbent position, from Portsmouth to Netley. It is not probable that ever any large number of these will be constructed, but, even if they were, it does not follow that they could be got near enough the front to be made available; and, besides, such a reserve would be unnecessary, for goods waggons and second-class carriages can be easily adapted to take their place.

Sleeping-saloon carriages may be mentioned in the same category, and could or need not be counted on in time of invasion, for precisely similar reasons.

The compartments of second-class carriages can be prepared for the reception of two stretchers with severely wounded by placing two cross supports upon the opposite seats: the stretchers are then introduced into the compartments by the attendants, and laid on these.

The cross supports are made of wood, about 5 feet long, 6 inches broad, and $1\frac{1}{2}$ inch thick: a centre block and two side blocks are nailed on one side, leaving two gaps into which the side pole of each stretcher fits; the stretchers are thus kept from shifting during transit, and a space left between the two on which an attendant can sit.

But it is to goods waggons we must mainly depend for the conveyance of wounded requiring the recumbent position. Experience has demonstrated, that of the various conveyances, making up trains for the movement of large bodies of troops, 50 per cent. are goods waggons. These are the waggons, therefore, which will principally require to be adapted for the purposes of sick-transport; but as their springs are very stiff, means must be devised for lessening the roughness of the transportation. The simpler and more economical the method by which this is accomplished, the more suitable it will prove itself to be. Various methods have been practised from time to time. Sometimes the

floor of the goods waggons has been covered with a thick layer of loose straw or leaves, as was the case in the earlier part of the American war of the Rebellion, and the stretchers holding the wounded, then laid on this: but so imperfect was it found to be, that it was soon abandoned. On other occasions upright stanchions, provided with india-rubber rings, were inserted between the floor and the roof at the proper distance to receive the ends of the stretcher poles, and in this way two tiers of stretchers suspended in the waggon. Another comfortable plan, which, however, has been only submitted to experimental trial, consists in the employment of spring stretchers, which are made to contain within themselves the requisite amount of elasticity to obviate the inconveniences resulting from concussion or vibration.

These and other methods have been objected to on the ground of their cost or else complexity. "It must not be forgotten that a plan applicable to those waggons, which are most likely to be available near the battle field, viz., the goods waggons of the supply trains, is much preferable to even better yet more complicated arrangements."

The two simplest and best methods¹ of transforming goods waggons to hospital use are those of Mr. Grund and Dr. Zavodovsky—the former a Prussian, and the latter a Russian gentleman. Some short account of each may not prove uninteresting, and particularly of the latter, which seems not to be very generally known in this country.

In Mr. Grund's plan (*vide*, Figs. 1 and 2), three stretchers are supported on two transverse wooden bars resting on semi-elliptical springs. The springs are fastened at one end to the flooring to keep the bars stationary, while at the other end are rollers to permit the yielding of the springs. The latter are surmounted by clips to receive the cross bars. Two

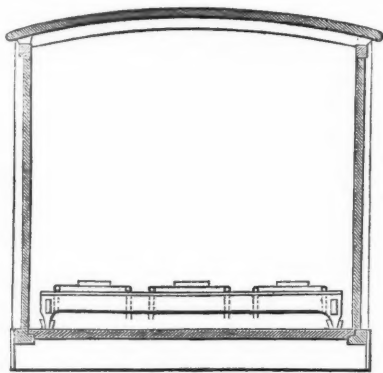


Fig. 1.—End section of part of a goods waggon, fitted on Grund's plan (after Loeffler).

¹ For an account of which I am indebted to a work on "Transport on Rail-Roads," by Assistant-Surgeon Otis, United States Army.

cross beams and four springs constitute the outfit requisite for the reception of three stretchers, and cost £1 16s. This system is simple, inexpensive, and comfortable, and of ready adaptation. Any sort of stretcher can be used. Four hospital railway trains, employed by the Bavarians in 1870-71, were fitted up on this principle. The trains made thirty-nine trips, transporting 10,800 patients.

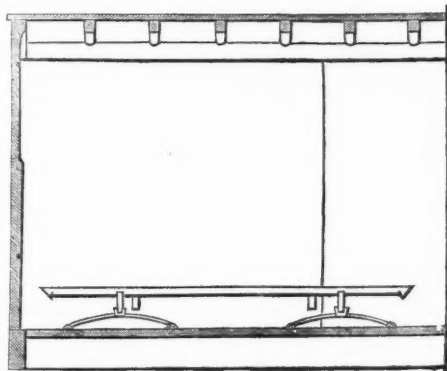


Fig. 2.—Longitudinal section of the same (after Loeffler).

In Dr. Zavodovsky's plan (*vide*, Fig. 3), two cables an inch thick are suspended across the top of the waggon, and secured to iron hooks that

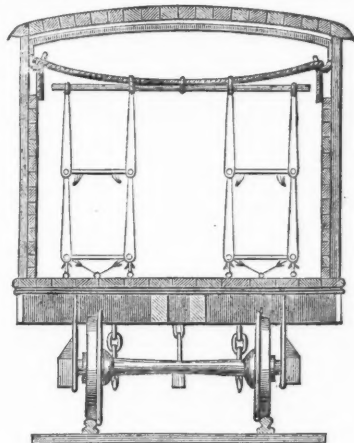


Fig. 3.—Transverse section of a goods waggon, fitted on Zavodovsky's plan (after Zavodovsky).

fasten to iron rings $2\frac{1}{2}$ inches below the roof of the waggon. If hooks and rings are not available, the ropes may be passed through holes bored in the side of the waggon. To each rope is attached a pole of oak, ash, or elm, at least 8 feet long, and $2\frac{1}{2}$ inches thick. To the poles are attached four cords with knots arranged that they may support the stretchers on a level. To prevent the swaying of the stretchers, the lower ones are fastened to hooks in the floor. Expense of outfit for four stretchers, £1 16s. The system is simple and inexpensive.

As Professor Esmarch remarks, "It would be a worthy undertaking for National Aid Societies to collect models of these and other plans, from which, on the outbreak of war, the requisite materials might be manufactured."

In conclusion, I have only to say that I hope the day may not be far distant when we can point to our ample hospital reserves—adequate in every way to meet the requirements of the wounded in an European campaign, and to tender my apologies for the many imperfections of what no doubt must have been to many a tedious lecture, and to thank you for the kind attention you have been pleased to grant me during its delivery.

Surgeon-Major MANLEY, V.C.: I can add very little, or absolutely nothing to what Mr. Moore has said; the lecture has been so exhaustive, and at the same time so much to the point. As far as my own experience goes, only one plan seems to offer, and that is the plan by which the wounded are distributed as soon as possible from the front; setting aside the military question altogether, on the score of humanity, it is the only one that can possibly be entertained. You save life in a great number of instances which otherwise would be sacrificed by leaving the wounded on the field, or by keeping them close to the front, you get them into better beds, they have better food, and you get them better treatment because you have more force and appliances available. I myself, after capital operations in the New Zealand War, such as amputation of the thigh, moved men four hours after the operation twenty-six miles in a country drag-cart with very good effect, much better than if they had remained in the tents in the front. As regards the attendance, our great failing is, I think, that the highly-trained Hospital Corps man is put to the duty of bearer, by which means his energy is exhausted, as it cannot be supposed that he can attend on the wounded men as well, because you must remember that these men require night and day attention; therefore a man very soon gets knocked up. I was looking over the mobilization scheme the other day, and I consider the number of Army Hospital Corps men quite inadequate. In fact, the field hospitals would be *hors de combat* altogether after three or four days' fighting, simply because the skilled orderlies are not supplemented by what I may call hospital labourers to do the rough work, or, in fact, bearers. I therefore think the Army Hospital Corps must be very much increased, and the only way in which it can be done is that suggested by Mr. Moore.

General CAVANAGH: It is in my power, from personal experience, to corroborate Dr. Manley's assertions as respects the practicability of at once removing the wounded to a distance. It has fallen to my lot to be twice removed, severely wounded from the field; and on the first occasion, when I had lost my leg, the medical man carried me with the regiment, because he was satisfied that under his own charge I should get proper attention, and I believe, owing to his adopting this course, my life was saved. I think we marched ten or twelve miles a-day for the three successive days after my leg was amputated.

Mr. FURLEY: I am afraid you do wrong in calling upon me, although I feel flattered that you should do so. I listened with very great attention to the admirable lecture that has just been given, but it would be an impertinence to attempt to add anything to what has been so ably said. I cannot pretend to enter

into such technical and professional questions. At the same time I must say the part I, as a volunteer, appreciate the most, and most perfectly understand, is, that suggestion made by Mr. Moore with regard to the manner in which the Army Hospital Corps should be recruited. That, I think, is an admirable suggestion, and certainly the most practical I have yet heard.

Mr. J. G. IRVINE : I do not know whether I may be in order in giving a little experience with regard to the possibility of Volunteers being able to carry out such a duty, but I think, as having been myself a Volunteer Captain, and as having also started a very perfect organisation of another character as firemen, I may say that I think the element that the author of this paper is falling back upon for his bearers is one that may relied upon. We have tested them as firemen, and find them quite equal to sailors.

Deputy-Commissary J. S. YOUNG : I feel some difficulty in rising, because just as a system is made up of details, so in this case—as the Chairman has said—the subject of the lecture is very wide, and it is therefore somewhat difficult to embrace all the subjects of criticism in a few words; but there are some points which seem to my mind worthy of one or two remarks. The lecturer has directed his attention chiefly to the mode of recruiting the Army Hospital Corps, and to the wants of the Army at large, as laid down in the mobilisation scheme. There is one thing to be said with reference to that, that the mobilisation scheme itself has not yet made its appearance except upon paper, and it may be presumed that the authorities have some scheme in their minds for developing the resources of the Medical Department equally with the resources of the combatant portions of the Army. At present there is but one Army Corps, which is stated to be completely filled up by the Line, and certainly the Army Hospital Corps, as laid down in that table, is not at present sufficient for the purpose. It must be remembered, however, that the strength of the Army Hospital Corps, specified in the table—namely 2,195, is a maximum strength for an Army Corps, at least I believe so; and that it is not exclusively for the conditions of home service but the maximum strength that may be applied to an Army Corps in any great European war; I take it, for most of the wars England has engaged upon, that such a strength would be altogether out of place. In connection with the suggestion for increasing the Medical Department by the aid of Volunteers, I would just point out this one fact, that it looks very much like continuing the regimental hospital system. It is making a unit within the regiment itself, a system which the Secretary of State for War only last session, in introducing the Army Estimates, laid down that he had departed from entirely, and he stated that he would not listen to any plan which involved the introduction of the regimental hospital system. I am afraid, therefore, that this suggestion is quite at variance with the principle laid down broadly by our War Department. At the same time it seems to me branching out from this suggestion; it is quite possible, in connection with local volunteer bodies, to organise a sort of Reserve Army Hospital Corps, which shall not form part of the combatant volunteer force in itself, and by localising its efforts to spread it throughout the country in such a way that its members can make use of all the local means which are peculiarly known to themselves as being in the locality in which they serve. I think in that respect certainly an addition might be made to the resources of the Medical Department. There was one other point, and that is, the suggestion that the National Aid Society should furnish, or rather that we should like the National Aid Society to furnish, surgeons to aid the regular service. It seems to me that that is placing the National Aid Society in a position it may not feel itself able to come up to, because it assumes that the society is placed upon some recognised and definable official basis, whereas at present it has only existed as the outcome of national sympathy with the sufferings of the sick and wounded during the Franco-German war. If any efforts were made in that direction it might tend to lessen the responsibility of the Government itself to give that complete and perfect system which it ought to establish within the Army itself. In that way I think it might be dangerous to rely upon the National Aid Society, though at the same time I feel that just as there was a field during the Franco-German war for aid to the sick and wounded, so there will be again in any great war that may subsequently arise.

Sir WILLIAM CODDRINGTON : The point I wish to remark upon is the value of

the lecture with regard to establishing a certain number of men either in rear of each company, or in rear of each battalion, specially adapted for the purpose of taking the wounded off the field; this I should imagine was the general tendency of the lecture. Any person who brings that to the notice of the Government, in order to establish that which every military man must feel to be a necessity, would give a great advantage to the army in which it were adopted. The tendency to help a comrade is laudable; but when it perhaps employs four men to take one man to the rear, you may imagine what a diminution it may cause to the fighting force in front. The only way of really preventing that, is to have men told off, as in the German services both of Austria and Prussia, men whose special duty it is. In that case, when any other person leaves the ranks, it becomes a breach of duty, because we know that there are other people able to take that man off the field, and do it better than the man with arms in his hands. I think that is the main point we should wish to see established in the Army, and I hope the tendency of this lecture will be to put it in that light. In that respect I, as a combatant Officer, should feel it is of the greatest possible advantage. The details of the medical part, namely, moving the wounded quickly off from the front to the more immediate rear, and then eventually to their own homes are, no one can doubt, of extreme value.

The CHAIRMAN: It remains to me to tender our thanks to Mr. Moore for the very interesting lecture that he has given us, on a subject of the very deepest importance, and one which must enlist the sympathies of all Englishmen and Englishwomen. We know that war is a great and tremendous evil, but nevertheless we all admit that it is a necessary one; and, if we are bound to admit that it is a necessary evil, surely it is the part of all humane people to be quite certain that they have done all in their power to render aid to the soldiers who are bound under their sense of duty and under their engagements to go into war; and it is nothing else than our duty to see that everything is done within our power for affording them that assistance which they may unfortunately require. Having listened attentively to the interesting lecture, I am bound to say, speaking in the presence of Sir William Codrington, that I am very glad Mr. Moore has drawn our attention to the fact that we are behind some other nations in providing for the clearance of the wounded from the field in time of battle. Sir William Codrington's remarks are not new to me, for shortly after the termination of the French and German war, I gave a lecture in this theatre, and Sir William Codrington at that time drew attention to the necessity of having a staff of men trained to carry the wounded from the field. I remember his drawing attention to the fact, that it was a very great risk to allow our soldiers, men who ought to be using their rifles, and engaged in military operations, to leave those duties in order to carry the wounded from the field. After so long a period as has elapsed since the French and German war, I do think it is to be regretted that our lecturer found it necessary to go the Prussians to teach us what should be done. We should have been much better pleased if Mr. Moore had been able to tell us what we had done ourselves, and what we might learn from preparations already completed for the transport of the sick and wounded in war. Unless these things are practised in time of peace it needs no proof to show that when we are put face to face with an enemy there will be great difficulty in carrying them out. It is like drill, we cannot expect soldiers to be acquainted with it unless they have practised it in time of peace; neither can we expect those who should carry the wounded off the field to the field hospitals in the first instance, and then to the more permanent hospitals in rear, unless they have been taught the manner in which it should be done, as described in the lecture. With the Prussians the system may be said to be simplified by great consideration and management, and it has become comparatively a simple thing. But first, the organisation must be there; and I should like to ask whether we now have a thoroughly well thought-out scheme by which when we go to war, this most important duty will be efficiently performed. Our sympathies are all with it,—the sympathies of the Queen, the sympathies of the Royal Family, and the sympathies of all the people are in favour of a good service for the sick and wounded; but, after all, what has been done? I am afraid that very inadequate provision has been made to meet this want. Mr. Moore has suggested, that we, as a National Sick and

and Wounded Aid Society, should lend our assistance, or at all events offer our assistance, and if possible give our aid as volunteers to supplement this want, which is admitted to exist. I believe that we should be able, and if asked, we should be willing to do something. But you must remember, that we are unrecognised. We have never received any encouragement from the Government, and we have never, in any way, been recognised by the military authorities; and I am convinced at this moment that if we were to make such an offer as that which has been suggested, we should be told that it was perfectly unnecessary, and that the whole thing was properly arranged. I will not say anything more upon this subject. It would not perhaps be becoming that we should discuss that question in this room. I will merely add that the discussion has been most interesting; and on your part, I beg to tender to Mr. Moore our very sincere thanks for his lecture.

Evening Meeting.

NAMES OF MEMBERS who joined the Institution between the 30th May and 19th June, 1876.

LIFE.

Spratt, A. G., Lieut. 1st West India Regiment.

ANNUAL.

Lloyd, G. M., Lieut. R.A.

Graham, F. W., Captain 103rd Regt.

Harrison, Henry, Lieut. late 8th Hussars

Boys, Charles Vincent, Lieut. late 7th
Surrey Rifle Volunteers.

Monday, June 19th, 1876.

ADMIRAL SIR HENRY J. CODRINGTON, K.C.B., in the Chair.

**ON THE BEST METHOD OF PROPELLING STEAM SHIPS,
SO AS TO GIVE THE GREATEST FACILITY FOR MAN-
ŒUVRING IN ACTION, AND FOR AVOIDING COLLISIONS
AT SEA.**

By R. GRIFFITHS, Esq., C.E.

SINCE I proposed reading a paper on the above subject, I have been making several experiments with models, and it may not be out of place here to explain those results which are connected with the present subject.

Since the introduction of steam for propelling ships, there have been proposed numerous plans and suggestions for obtaining the greatest speed with the steam power employed, the principle movement being in the direction of lengthening the ships relative to their width; this plan has been carried so far, that screw ships are now constructed whose length is from eight to twelve times their beam; while armour-plated ships have been carried to the other extreme, and have been constructed with a length only equal to their width. With regard to the lines of a ship, there appears to be as great a diversity of opinions as with regard to its proportions; and there are advocates for full bows and sterns, fine bows and sterns, wave lines, and lately, I find, for stream lines; but it appears extraordinary that, after all the elaborate experiments that we constantly hear of being made, with such extraordinary results, there does not appear to be any improvement in the speed of ships-of-war, relative to the power exerted to propel them, over that which was obtained twenty or thirty years back. Nor has there been any improvement, as far as speed is concerned, in the screw-propeller; the only improvement has been made by the engineer, who has constructed engines which, with the same consumption of fuel, give out considerably more power than was formerly obtained.

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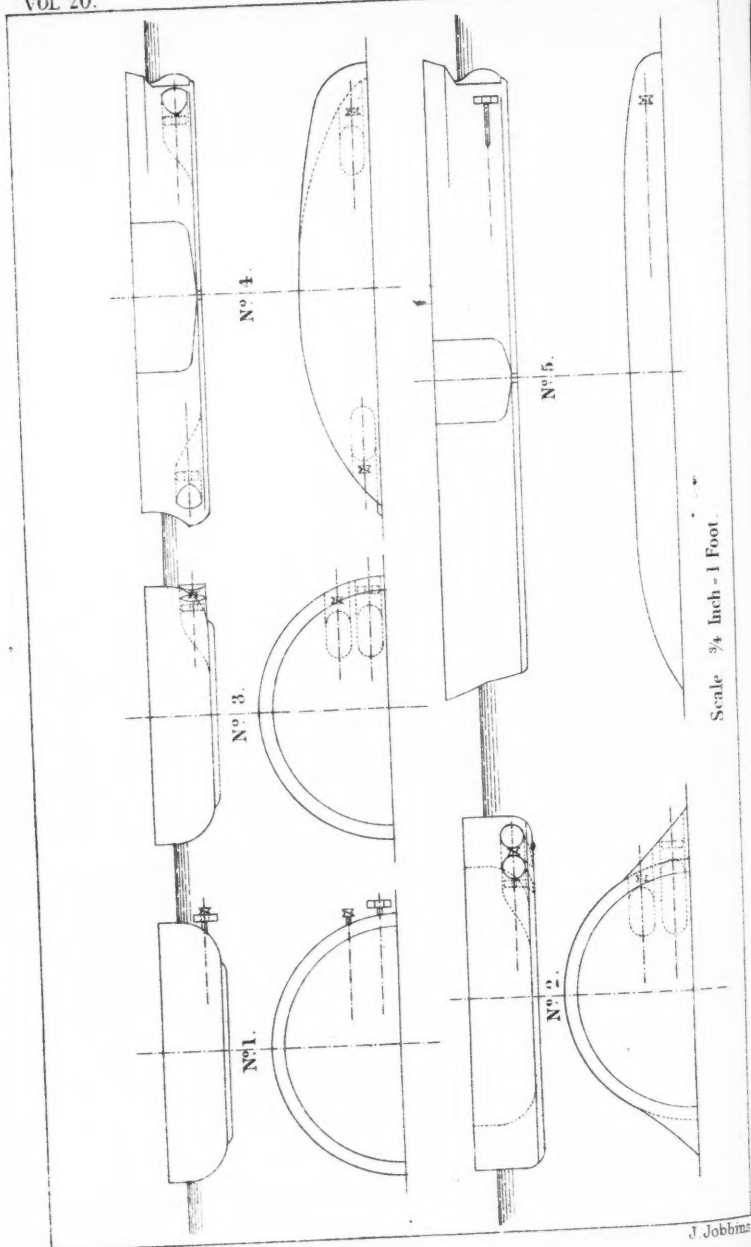
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The great question that now requires to be solved is, how to make war-ships capable of meeting all the exigencies of the present age? It will be admitted that, whatever may be the destructive weapons used in naval warfare, speed and facility of manœuvring will be essential elements in the ship's favour. Of the two, I consider speed and safety to the ship of the greatest importance, and, to obtain it, ships must be made from four to six times their beam in length. The movement at present appears to be in favour of *shortening* ships of war: this offers several advantages, such as reducing the armour relative to the displacement, and enabling the ship to manœuvre better; but I find that when the length is reduced to three and a-half to four times the beam, the resistance, relative to the displacement, begins to increase. The diagrams, Nos. 4 and 5, represent models of the same displacement, the weight of each, with the propelling apparatus, being 44 lbs. No. 5 is eight times its beam in length, viz., 5 feet long, $7\frac{1}{2}$ inches beam, and is fitted with twin screws in the ordinary manner. No. 4 is two and three-quarter times its beam in length, viz., 3 feet $2\frac{1}{2}$ inches long, 1 foot 2 inches beam, and is fitted with screws in tunnels. When the models were towed through the water at the same speed as when propelled by screws, the resistance of the short model was to that of the long as five to three; but when they were propelled by the same power and screws, both made the same speed, viz., 88 feet in a minute. This was caused by the screws in the tunnels of the short model drawing their supply of water from underneath the model at sufficient distance forward to prevent them retarding the model by drawing it from the stern; but when the screws were moved back $3\frac{1}{2}$ inches out of the tunnels into the open water, and the tunnels plugged up, the speed was reduced to 62 feet in a minute, and the resistance to the power was increased. For, when the screws were in the tunnels, the revolutions were 645 in the minute, and 565 when the screws were moved into the open water, though the strength of the springs and the pitch of the screws were exactly the same in each case; and in all my experiments I find that, when the screw cannot, or does not, obtain a sufficient supply of water, it requires more power to obtain the same number of revolutions, and less speed is given to the model relative to their number.

The armoured ships of the present time are generally fitted with twin screws, with separate engines to each screw, both engines being together, and subject to be disabled together, in case of the ship being rammed, or a torpedo striking it. My opinion is, that ships of war should have their engine-power and screw-propellers separated into four distinct compartments, so that, should the ship be injured by ramming or by a torpedo, only one-fourth of her engine-power might be disabled; this method would also give increased facility for manœuvring. When twin-screws were first introduced, it was expected that, by reversing one screw, a ship might be turned round on its centre, and would also answer her helm quicker than if fitted with a single screw; but practice has shown that twin-screws possess no advantage over a single screw for steering or turning a ship. Now all the anticipated advantages of twin screws can be more than fully

realized by having two screws within tunnels at each end of the ship; for, by going ahead with the port engine and astern with the starboard engine at one end, and ahead with the starboard and astern with the port engine at the other, the vessel would turn on her centre in a very short time, and would answer her helm when going either ahead or astern much quicker than is now the case. Moreover, when the screws are employed in tunnels, they can be so arranged that they may draw their supply of water from *inside* the ship in the event of a large breach being made by a ram or a torpedo, and thus the whole power of the engines could be made available to pump out the water while the vessel would also be propelled.

With regard to the speed obtained by the models, when the difference of resistance is taken into account, it will be found that nearly 16 per cent. more speed is obtained by working the screws *in tunnels*; and there can be no doubt but that this amount is lost in all vessels which have their screws worked in open water.

In order to avoid collisions at sea, which have of late caused so frightful a loss of life and property, it becomes imperative on steam ship owners to adopt every practical plan that would have the effect of reducing the risk of their occurrence. The most necessary requirement is to have the ship constructed so that she will answer her helm quickly under all circumstances, and I feel convinced that commanders of steam ships are often unjustly blamed by the public when they have met with a collision, for when a steam ship gets so near to another as to render a collision probable, the first thing that is done is to stop and reverse the engines. The helm has then no control on the ship, while the momentum carries the ship forward for a considerable distance. In many cases she would be more likely to escape the collision if the engines had not been reversed, for then the helm might have been sufficient to turn the ship so as to escape it; but should this have been done, and a collision take place, what would a jury and the public say? All passenger steam ships ought to have their engine-power divided between the bow and stern, which would give considerably greater safety, as well as speed and other advantages. With such an arrangement, a commander would have perfect control over his ship, for by stopping the bow-engine and reversing it, and allowing the stern-engine to remain working, the ship would be brought to a standstill quickly, while her helm would continue to act until she was entirely stopped. I have no doubt that at some future time the Legislature will compel passenger ships to divide their engine power, and not allow so many lives to depend on one engine and on one propeller,

I will now briefly describe the models and give some of the results obtained by my experiments.

Diagram No. 1 represents a model similar to the Russian circular ironclad, "Novgorod," which when tried gave a speed of 52 feet in a minute with 640 revolutions of the screws.

Diagram No. 2 represents the same model, but it is fitted with elongated ends, and the screws are placed in tunnels. When tried it went 68 feet in a minute with 645 revolutions.

Diagram No. 3 represents the same model, but without the elongated

ends, the screws being still in tunnels. This went 66 feet with 645 revolutions.

Diagram No. 4 represents the model $2\frac{3}{4}$ times her beam in length, which is fitted with screws in tunnels. When tried it went 88 feet with 640 revolutions.

Diagram No. 5 represents the model of an ordinary ship 8 times her beam in length, fitted with twin screws in the ordinary manner, which went 88 feet with 620 revolutions.

In these experiments, the power employed and the displacement of the models were the same in every case. The experiment in towing models Nos. 4 and 5 to show their relative resistances, before referred to, was accomplished as follows: the models were attached to each end of a rod 6 feet long, and a line was attached to the rod between them. The point of attachment of this line was then shifted till the rod would remain at right angles to it when the models were towed at the speed they would make by their screws, viz., 88 feet a minute, and then the distances from the ends of the rod to the point where the line was attached showed the relative resistances of the models. These distances were found to be 2 feet 3 inches from the short model and 3 feet 9 inches from the long, so that the resistance of the short model was to that of the long as 5 is to 3. In another experiment the short model was propelled by her screws moved back out of the tunnels into the open water, and the tunnels left open, and the speed was then found to be only 71 feet in a minute with 600 revolutions; and when the tunnels were plugged or stopped, the screws being left in the same position, the speed was reduced to 46 feet in a minute with 558 revolutions.

In conclusion, I would remark there is one feature in connection with having the screw-propellers worked in casings or tunnels to which I drew attention here some time back, and to which I would again refer, viz., as to the facility it offers for drawing the water out of the ship, should she be rammed or be struck by a torpedo. An armour-plated ship, with 800 to 1,000 nominal horse-power, would require four screws of 12 to 15 feet diameter, and, when worked at full speed, would discharge a column of water through each of them at the same speed as the ship would make. It follows, therefore, if the engines gave out the power that would propel the ship at 10 knots, each screw would discharge the water inside her at the rate of about 3,000 tons of water per minute, provided suitable arrangements were made; and since the probability is that a ship in action is more likely to be disabled by a ram than by a shot, or by a torpedo, I think this point should be well considered by those who have the designing of our ships-of-war. I agree with Captain Scott, in the very able paper he read here last Friday, in which he gives the first place to the ram, and the next to the unsinkability of ships-of-war, and I consider that we shall very soon find that the guns will become of secondary consideration to the qualities of high speed and unsinkability in ships. From some recent experiments which I have made (which, for several reasons, I cannot at present disclose, though I may state this much), I foresee that greater speed, invulnerability, and unsinkability may be effected by very simple modi-

fications in the construction of our ironclads, and which results are quite within the power of the authorities to effect without that enormous outlay which the armour-clad ships of the ordinary types would require for effecting these objects.

The CHAIRMAN: I hope some gentlemen present will favour us with their remarks on the lecturer's paper. I would myself begin by asking a little more information on one or two points. I do not quite understand whether these tunnels are to be opened below, so as to allow the water to flow into them from below. (Mr. GRIFFITHS: Exactly so.) But supposing we leave them open below, so as to allow a free volume of water to rise up underneath and flow into them, how is the proposed connection made with the cavity of the ship, in order to extract the water which has leaked into it? How is that communication to be made so that that water which rises from below into the tunnel will not by preference go also into the cavity of the ship, as well as supply the screws? How is the engineer to shut off the external water rising up from the bottom, and to take the water from the cavity of the ship? Then we must remember that by putting four engines into a ship; two at each end, we come across other difficulties. First of all, there is the difficulty of the chance of collisions, which mostly affect the fore-body of the ship. There will also be a very large gap taken out of the strength of the ship in the fore-body, in addition to what is naturally taken out of the run of the ship. We must provide some means of strength for that fore-body, or something to make up for that. Then there is the difficulty of having four engines to deal with, instead of merely at most two: there is the supply of fuel and all the requirements of the engines, the additional space required, which would take out of the space for cargo or for anything else, and of course the additional hands required in the engineer's department, to attend to four engines instead of two. I presume in the trial of the towing, the screws were not fixed; in each case there were two screws, and in each case those two screws were allowed to be free.

Mr. BREGH: Mr. Chairman and Gentlemen,—I should like to offer a remark or two. Mr. Griffiths has been good enough to give us a great deal of information on the screw, but there are one or two details he has entirely left out. He has not told us what time his vessel will back in, and whether there is any difference when he applies the tunnel in combination with the screw; that is to say, supposing he is going at a certain speed, and stops the engine and reverses, I should like if he would give us what time it takes before the vessel stops, then what time it takes before she goes astern, and also whether there is any visible difference when the tunnel is left out?

Captain Sir GEORGE BIDDLECOMBE, R.N., C.B.: I should like to make one remark with regard to enclosing the screw with a tunnel. We have already in the Navy fitted one vessel of that sort. Mr. Turner, assistant master shipwright at Keyham Yard, in 1858, fitted one (as stated in a lecture given by me here), and from various experiments he had previously made, he concluded that it would be very successful. The Government gave him the opportunity, but I am sorry to say the speed obtained by the screw being enclosed did not come up to what she originally worked at when it was open. I merely mention this as a fact. In regard to introducing a screw into the fore-body of a ship, especially of a man-of-war constructed as a ram, I do not know how that would act when you are going to ram a ship. For instance, in coming into collision with her, the chances are your screw would be in a very awkward position, and possibly get much injured by the collision, and you may not then be able to work the screw again. There is another point the lecturer mentioned in reference to collisions, that it was objectionable to stop and reverse the engines. My experience does not lead me to concur in that opinion; but I think if we saw a collision about to take place, common sense would dictate that we should stop the engines at once, because with the speed the ship had upon her, the helm would still be acting. I do not agree with the view that the ship is not acted upon by the rudder after the screw ceases operation.

Admiral SELWYN: I have one or two remarks to make on this subject, because I have taken a considerable degree of interest in Mr. Griffiths' experiments, as show-

ing the anxiety of a steady worker to prove by models all that could be so arrived at, and he has done a great deal in this direction. I also take a great interest in developing the screw off the face of the earth. I want to see its place taken by the turbine, and Mr. Griffiths has made a step towards making it a turbine by casing it. I doubt very much indeed that a division of the power, and therefore of the engineers and stokers, would be an advisable thing, either on board a man-of-war in action, or in a merchant ship, with a view to economy. You cannot work a number of stokers at two sets of furnaces in different parts of the ship with equal effect to that obtainable with the same number at a single set of furnaces. You must have different engineers, therefore you must engage inevitably in more expense. You must have two engineers in each watch, and a certain number of stokers to each set of fires. Each man cannot do his best work if he has not his full number of furnaces to attend to, and if he is obliged to go to another part of the ship. I should say you must have your staff nearly doubled. It is a question of economy. Whether it may be more advisable in the view of propulsion to put them there, is another thing; but at least in our mercantile marine, economy carries the day in every shape and form. Mr. Griffiths' experiments show very strongly the enormous value of a constant reference to a still larger series of experiments, of which very few people avail themselves to their full extent. I speak of Colonel Beaufoy's. Colonel Beaufoy has shown in a very large and long series of experiments, nearly all the facts that we now are trying to bring out. These would be more generally referred to if only they had been put in a condensed form; but it takes a man half a lifetime to get out the value of Colonel Beaufoy's experiments. He has shown one remarkable thing, and that is this: that whether you divide the water by a very narrow fine bow, cleaving the fluid like an axe, or whether you put that narrow fine bow flat on the water, and drive it over the water, the resistance is for all practical purposes the same: having fine lines, there is no more resistance in the one case than in the other. I say this because Mr. Elder distinctly showed by an experiment precisely similar to that of Mr. Griffiths, that is to say, a species of steelyard arrangement at the stern of the ship, and towing large models from it, that whether he took the finest vessel of deep draught and ten beams to the length, or whether he took a vessel of similar tonnage, but made of the shape of the segment of a sphere, there was not the slightest difference between their resistance. But there was this remarkable difference in another way: that whereas the sharp deep-keeled vessel plunged under water constantly and made bad weather of it, the segment of the sphere always rode over the water with perfect ease. I must demur to Mr. Griffiths' ideas about the turning by twin screws. I went down with all Mr. Dudgeon's early twin screws, and was witness to their turning with the utmost facility in smooth water. I am not so sure that they would always turn well in a heavy sea, and I have heard that they do not do so. But it is a great thing to be able to turn in a ship's own length, even in smooth water. When we attack in harbours or in smooth water, we shall very often find it of very great value, and as we shall not generally fight fleet-actions in gales of wind, it may be extremely useful in that case at sea also. Twin-screw ships do turn on their own centres so quickly that the remark of Sir Edward Belcher, who was with me on that occasion, was that he could not train the gun on board the ship so quickly as he could turn the vessel; that it brought the gun up to its mark better in every respect for the gunners than if he had tried to twist the gun about with screws and levers. Still, all these experiments have their value; and although I quite agree that for a man-of-war a screw at the bow is a very questionable advantage, I should much rather have something inside the ship altogether, if I could do it. When we come to substitute the use of the ram for guns and shot, I quite agree with the lecturer that the ram is a shot of the number of thousand tons force which is due to the mass propelled and its velocity, and therefore it is an irresistible shot. Admiral Sartorius's views on that subject are too well known in this Institution for me to advert to them. He was one of the first advocates of it, and he has been proved to be perfectly right in all that he advanced. But if we are to have a ram it is impossible to have the screw in the bow. It would simply be throwing away half the whole engine-power to do so. We could not hope to have the bearings in their proper place after the shock of ramming, and we all know what a distorted bearing of a screw-shaft is. Therefore I do not think we shall make any great progress in that direction. In the

experiment Mr. Griffiths has also tried an enlargement (first proposed in this theatre by Mr. Reed) of the Russian circular ships, giving her the bow and stern which Mr. Reed advocated, that is to say, a species of compromise between the sharpness of the deep-keeled ship, keeping the wedge shape to cleave the water, and the extreme diameter of the Popoffka and her sisters, I see one of those compromises which seldom gives full value in any direction, and Mr. Griffiths has thoroughly well proved that it does not give value in the sense of superior speed to any very great extent. On the other hand, taking the circular ship for what she is worth as an unmasted steam-driven vessel of enormous capacity and tonnage, capable of carrying coals for any voyage at any speed, with any gun and any weight of armour, I do think that there is a great advance to be made, and I hope to see strong attention given to the subject, as I also hope to see new experiments made on the "Waterwitch," to give us some idea of the value of the turbine-propeller.

Mr. GRIFFITHS in reply said: The first question is whether the screw takes the water from below. It certainly does, as shown in all these drawings; it comes from below right into the screw and passes out at the stern, and at the bow enters in front and passes out underneath the ship. With regard to the strength of the bow, I contend that the strength of that bow is as great with these screws as you can make it on the ordinary plan. Now, if I make a beam through the ship like a backbone, and make the tunnels and put the screws as far back as you like in the ship, the tunnels being built in the ship, how can anything give way? or that backbone can be made as far back as you like into the ship; so far as that goes, it is equally as strong as if there was no screw at all in the bow. The great advantage of taking the water from below is, as has been explained several times,—Mr. Froude experimented upon that,—that if you put the stern screw outside, it sucks away from the ship that water which would go to fill the space the ship has left, and, consequently, there is just double the resistance to the ship when the screw is pulling the water back. That he has proved and explained in two or three papers, and I find that to be the case in my experiment. It is not only what it takes from the ship, but this water that is forced back stops the current which runs after the ship to fill the space, so that it has a double effect in stopping the ship.

With regard to sucking the water out of the ship, one way which I have tried, and which I believe to be the simplest plan, is to have outside this tunnel (*pointing*), about half way around it, a space left all along connected with a pipe inside the ship. The forcing of the water through that tunnel will suck the water out of the ship. There was an experiment to this effect shown the other evening at the Royal Institution by Mr. Froude. The first who brought that out was Bernoulli, who showed that if water was flowing through a horizontal pipe at 9 feet per second, and a vertical pipe was connected with the horizontal one, water would be drawn up the vertical pipe a height of 2 feet in opposition to gravity. Mr. Napier, of Glasgow, has proved that by putting a pipe through the bottom of a ship, the suction of the water down, would show the speed of the ship. This takes place here exactly, when the screw is working, the water is forced back at half as fast again as the speed the ship is making, or faster according to the power exerted; first it takes the speed of the ship and afterwards the speed the screw forces the water back. If you are sucking the water from the inside at that speed, you may depend the water will go pretty quickly out of her.¹

ADMIRAL SELWYN: Is the access of the water cut off at the time you use the inductive, or the eductive, effort of the screw to pump the water out of the ship?

Mr. GRIFFITHS: No, certainly not. The screw uses the water from the sea, but the force of the water that it sucks through the tunnel also sucks the water

¹ I find from some recent experiments which I have made, that this plan cannot be relied upon, for the least leakage of air into the conducting-tube will destroy the effect of it, and an arrangement to shut off the sea-water from the screw and open the communication from inside of the ship to the screw would be preferable, or a rotary or other pump could be easily worked from the screw-shaft when required and the discharged water could be used for manœuvring the ship if required.

out of the ship. Nothing is wanted but a valve to stop the pipe that is connected with the water within the ship.

A VISITOR: When the vessel is proceeding forwards, does the water go back, because if the water goes back then it is all slip, the ship would not move. Water never does run back when the ship is going forward.

Mr. GRIFFITHS: Of course when the screw is working the ship moves on; if the ship is kept standing still, the water will be forced back. Loose the ship and nearly double the water goes through the screw directly.

The VISITOR: Not driven back.

Mr. GRIFFITHS: The ship goes forward. You must take the speed the ship goes, as well as the quantity of water the screw draws. I think in one of the papers I read, I explained that the pressure is double when the ship is under way.

With regard to the boilers, all the boilers would be placed in the centre of the ship whether working the forward or aft engine, and, consequently, that removes the difficulty with regard to the stokers. There need not be two sets of stokers if you divide the power, any more than if the whole boilers were working on one engine. Then as to how soon she will go astern: I found that by reversing the forward engine she would stop in one-third the time that she would if I reversed the after engine, because she drives that water forward against her, which is not the case with the engine at the stern; as to the speed, it is no matter at all which way I go, forward or backward, it makes no difference in speed or anything else. With tunnels around the screw there is a loss of speed, but how nobody ever ascertained the cause of it, is strange. I was with Ericson trying that experiment forty years ago, and he found directly there was loss of speed. When a screw is working in open water it gets a great quantity of water all round the periphery to supply it, whereas if you put it in an ordinary casing you stop the supply and your screw is short of water, but if you continue your casing and put a bell-mouth equal to the quantity of water the screw requires, you make up for that loss,—it is the funnel-mouth that makes the difference. In these casings I have a funnel-mouth which gives me about 50 per cent. more water than the area of the tunnel gives me. I enlarge the mouth of the tunnels according to the power used on the screw, and the effect of the screw in propelling the ship is in proportion to the water it gets supplied with.

The CHAIRMAN: However we may criticise some details of this plan, I think we must all feel obliged to Mr. Griffiths for the information he has given us on this point. There is a great deal that I admire in it and a great deal in which I go cordially with him, though in one or two points I might criticise him. I think we must all thank him very much for his lecture.

SPECIAL LECTURE.

Friday, December 15th, 1876.

GENERAL SIR RICHARD DACRES, G.C.B., R.A., in the Chair.

"A SKETCH OF THE RUSSO-TURKISH CAMPAIGNS OF 1828-29 IN EUROPE AND IN ASIA."

By Lieutenant-General Sir RICHARD WILBRAHAM, K.C.B., &c., &c., &c.

I HAVE found it a more difficult task than I had anticipated to bring so large a subject as the Russo-Turkish war of 1828 and 1829 within the compass of a single lecture.

My lecture professes, indeed, to be merely a sketch, but I fear that in some parts it will be little more than a bare outline.

It has been my endeavour, at all events, to bring before you in a clear and connected form the most important operations of a war, which is of peculiar interest at the present moment. I need scarcely say that I have treated the subject exclusively from a military point of view.

The chief interest and value of a study of the war of 1828-29 lies in this:—that it is the most recent of the many wars that Turkey has waged single-handed against her powerful neighbour. It therefore gives us the most reliable data that we can command for forming an estimate of the comparative military strength of the two powers.

We must, of course, bear in mind, in making such comparisons, that Russia was carrying on an offensive war at a great distance from her resources, while Turkey was acting on the defensive within her own borders.

War between Russia and Turkey was already imminent at the close of the year 1827, and indeed it had been evident long before that time that it was inevitable.

The Russian Army collected during the early part of 1828 on her southern frontier consisted of three corps, the 3rd, the 6th, and the 7th, and was placed under the command of Field-Marshal Count Wittgenstein, a name well known in the Russian wars against Napoleon. Later in the year it was augmented by another corps, the 2nd, and a division of the Imperial Guard. Moltke estimates the effective strength of the whole force employed against Turkey in the

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MAP OF THE RUSSO - TURKISH CAMPAIGNS TURKEY IN EUROPE ^{IN} 1828. 1829.

Note. Routes of the Russians in 1828.-----

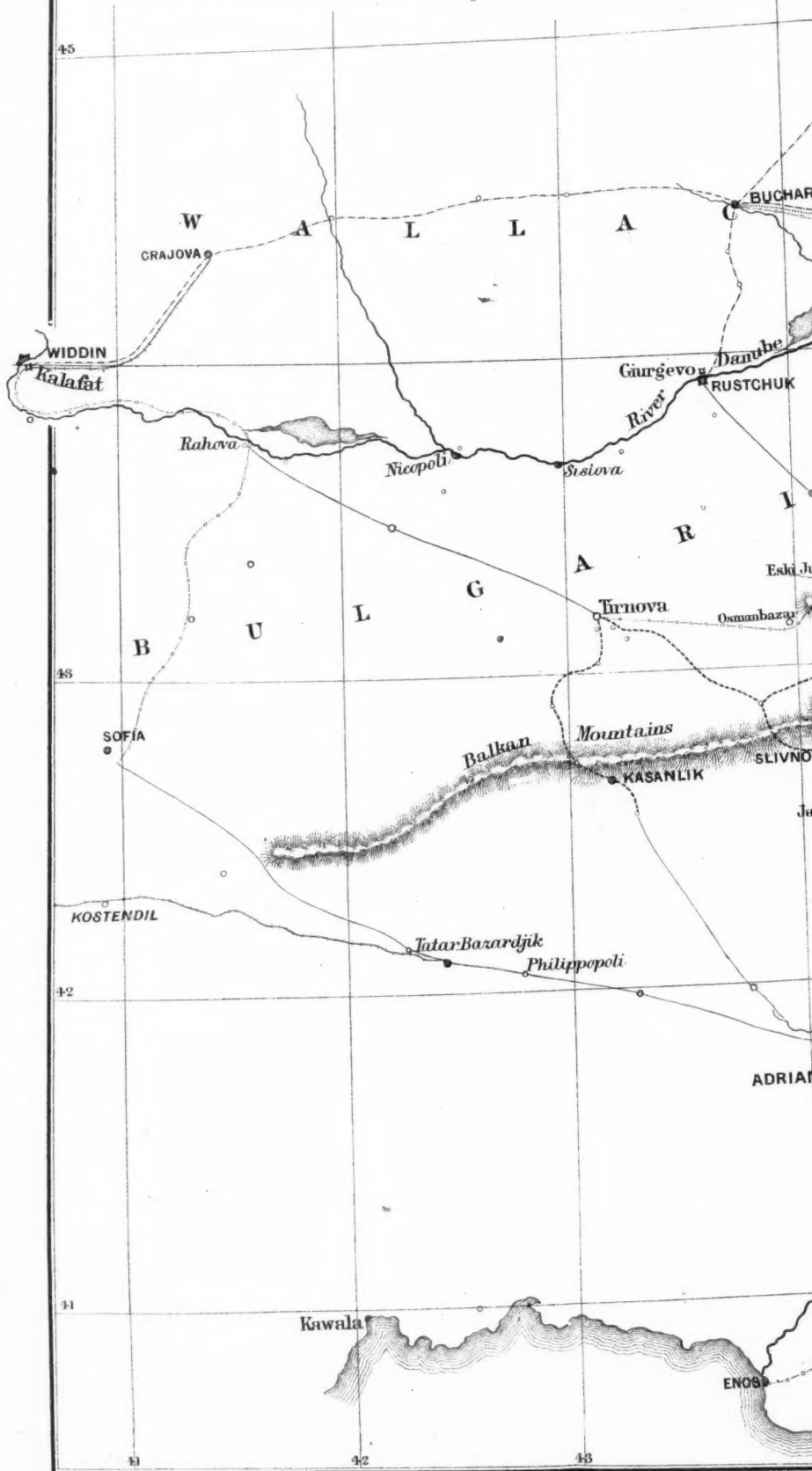
Retreat of the Russians in 1828.-----

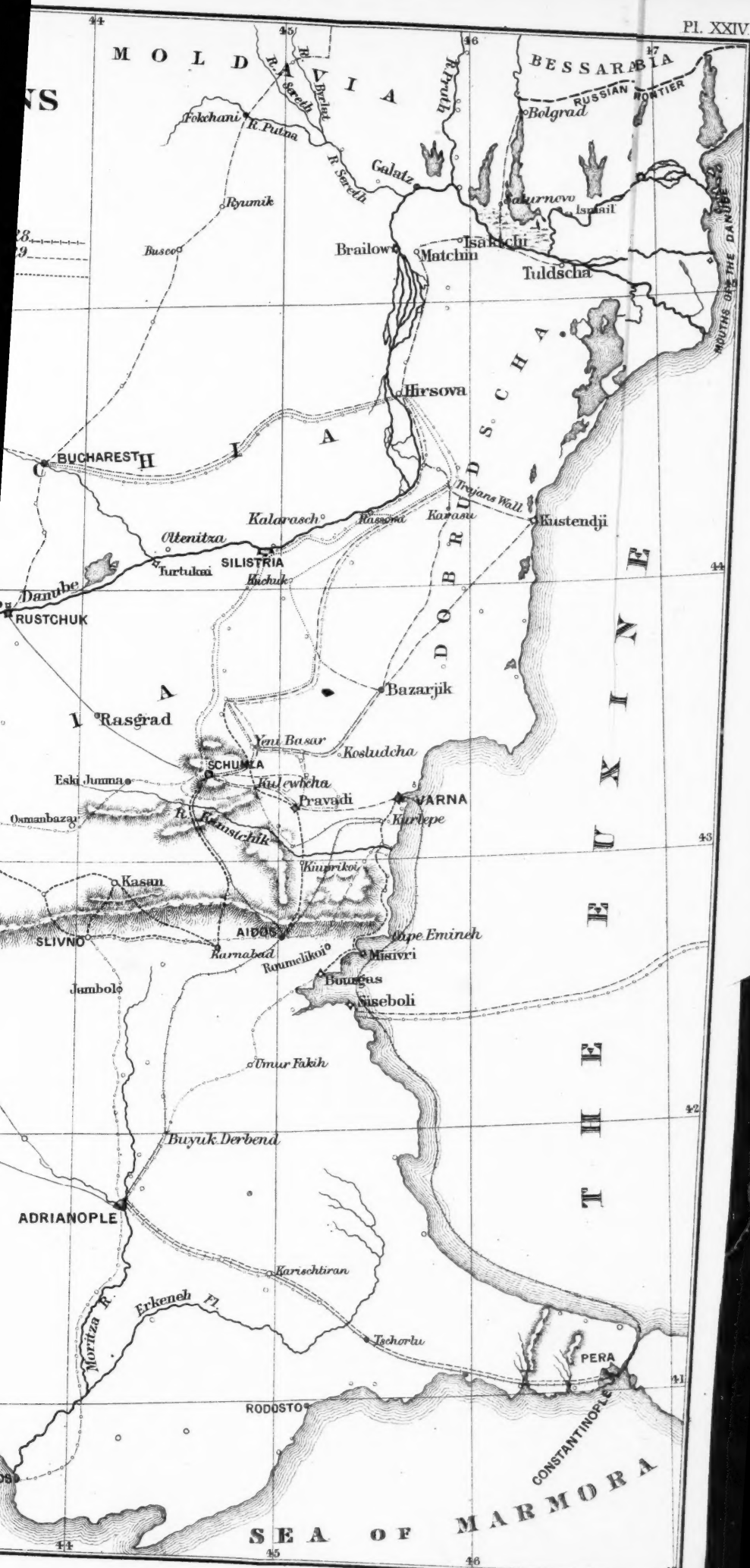
Routes of the Russians in 1829.-----

Routes of the Turks in 1828.-----

D° D° 1829.-----

Passes of the Balkan.-----





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first year's campaign at about a hundred thousand men and three hundred guns. This number includes four thousand Cossacks.

On the 28th of April, war was formally declared by Russia, and on the 7th of May, two corps, the 6th and 7th, crossed the Pruth and occupied the Principalities.

This declaration of war, so closely followed by the invasion of her territory, did not of course take Turkey by surprise, but it found her but ill-prepared for defence. The destruction of her fleet at Navarino in the preceding autumn had given to Russia the undisputed command of the Black Sea, without which, as we shall clearly see, the passage of the Balkan would have been impossible. Her regular Army—or Nizam—was so recent a creation that it had not yet acquired the consistency of disciplined troops. It was also composed mainly of mere lads, it having been thought that it would be easier at that early age to break them in to a system so novel, and so violently opposed to all their national and religious prejudices; and in the third place, the necessity of opposing a large force to the Russian troops collected on her Asiatic frontier prevented her from drawing reinforcements from the northern provinces of Asia Minor, which had always furnished the hardest and most faithful portion of her Army.

Before entering upon a sketch of the military operations, it may be well to make a few general observations on the theatre of war in European Turkey. They shall be very short, for with an audience composed mostly of military men, I feel as if they were scarcely needed.

The defences of the northern frontier of Turkey are strong and clearly defined. They consist of two almost parallel lines—about sixty miles apart—the course of the Lower Danube and the range of the Balkan.

In modern warfare a river is no longer the formidable barrier that it used to be. But the Danube presents more than ordinary obstacles to the passage of an army advancing from the north. Throughout its whole course from Widdin to the sea—and we do not need to extend our observations beyond Widdin—the right bank dominates the left. It rises, for the most part, abruptly from the water's edge, to a height in many places of two or three hundred feet, while on the opposite bank, the country is low and marshy, intersected with watercourses and flooded during the rainy season. The river varies in breadth from half a mile to a mile. In some parts it is sixty or seventy feet deep, but generally much less; the ordinary current runs between two and three miles an hour.

The line of the Danube is strengthened by numerous fortresses. The chief of these—all of which played an important part in the war—are Widdin, Rustchuk, Silistria, and Brailow. With the exception of the last-named they all stand on the right bank. Widdin and Rustchuk have *têtes-de-pont* on the left bank at Kalafat and Giurgovo, which gave them free access into Wallachia and obliged the Russians to detach a considerable force to keep their marauding parties in check.

Below Rustchuk there are only two points at which the left bank of the river can at all seasons be approached. The first is Oltenitza and

the second is opposite to Silistria. The passage at Oltenitza is defended by an entrenched position at Turtukai on the right bank, which, though of no great strength, sufficed to deter the Russians from attempting to cross, and caused them, as we shall see, the most serious inconvenience.

For several reasons Oltenitza would be the most favourable spot for an invading army to pass the Danube. It is the most direct, or at least the most practicable, line from the Russian frontier to both Shumla and Varna. It avoids the harassing march through the barren and waterless Dobrudscha, and it stands at a considerable distance from any of the great fortresses, which might threaten the line of communication, being twenty-four miles from Silistria, and more than forty from Rustchuk. The breadth of the river at this point is just short of a thousand paces.

Of Brailow we shall have to speak presently.

The country lying between the Danube and the Balkan is an undulating plain more or less well cultivated, and practicable for troops till you reach the wooded spurs projecting from the great mountain range. In the rainy season, however, the Bulgarian roads are well-nigh impassable, while in summer the heat is intense, and the water scanty and bad. Near the southern edge of the great plain stands the fortress, or rather the entrenched camp, of Shumla, which Turkey has always considered her main bulwark against Russian invasion. We shall, however, find that the possession of Shumla, which she retained during the whole war, was no security against the passage of the Balkan, or even the advance upon Adrianople. Shumla is connected with Varna by the fortified post of Pravadi.

The Balkan consists of a chain—or rather mass—of thickly wooded mountains from four to five thousand feet in height and from fifteen to twenty miles in breadth. It is only with the eastern part of this chain that we shall have to do. The passes are of no very great height, but the country is so rugged, and the roads—or rather tracks—so bad that they would have been very difficult for troops to cross even unopposed. There are six passes considered more or less practicable, but as, owing to the incapacity and inertness of the Grand Vizier, no attempt was made to defend them, it would only be a waste of time to describe them, more especially as they have since that time, I understand, been strongly fortified.

I will now endeavour to give as clear and concise account as I can of the movements of the contending armies, beginning with the Russians, who were ready to take the field long before the Turks had begun to bestir themselves.

We have seen that the 6th and 7th corps had crossed the Pruth on the 7th of May. The former, under General Roth, was to occupy Moldavia and Wallachia, which it did without opposition. The troops that had been stationed in these provinces had been withdrawn to garrison the Danube fortresses, and all the resources of the Principalities in grain, and cattle, and forage, had been abandoned to the enemy. The 7th corps, commanded by the Grand Duke Michael, and which was provided with a battering train, was directed against

Brailow, and commenced siege operations on the 21st May. The besieging force amounted to about 18,000 men. We shall find that this was the only siege throughout the war which was undertaken with anything like adequate means. Though it must have been foreseen from the number of fortresses, and from the well known tenacity of Turkish troops behind stone walls, that several sieges would have to be carried on at the same time, only one battering train had been provided; and to this unaccountable neglect we shall find that most of the hardships, and dangers, and losses of the campaign are to be attributed.

Brailow is the strongest of all the fortresses on the Lower Danube. As a rule, the Turkish fortresses are of a very defective construction; they are seldom protected by efficient outworks, and the suburbs are allowed to extend up to the very walls, thus affording shelter to a besieging army.

Brailow was rather more scientifically constructed than most. It was amply provided with stores of all kinds, and defended by a numerous and determined garrison. The walls were armed with 278 guns and mortars.

Moltke gives a curious picture of the manner in which the guns of Brailow—like those of *all* Turkish fortresses, I suppose—were mounted and served. Guns and mortars of all calibres were placed side by side indiscriminately, and served from a common heap of shot and shells of every size and shape—for he tells us that very few shells were round. When the balls were too small, the Turkish gunners wrapped them in a sheepskin to make them fit. The powder was stored partly in private houses and partly in wooden sheds. There were no cartridges, and all the pieces had to be loaded with a scoop. Yet in spite of all this, the guns were well served, and did great execution at short ranges, which a Turk prefers.

After a stubborn defence of twenty-seven days of open trenches, during which several ineffectual attempts were made to carry the place by storm, Brailow capitulated on the 18th June. The garrison was allowed to march out with bag and baggage, and to proceed to Silistria, where they formed the nucleus of the garrison which defied all the attempts of the Russians throughout the whole of the campaign of 1828 and great part of that of 1829.

Meanwhile, the 3rd corps, after a month's delay, had effected the passage of the Danube on the 8th June. It was a daring and hazardous undertaking, and owed its success partly to an unexpected piece of good fortune, and partly to the misconduct of the Turkish troops opposed to them. The spot selected for the passage was Satanovo, nearly opposite to the Turkish fortress of Isaktchi. The left bank of the river is here so low and marshy that the point at which the bridge was to be thrown across could only be reached by laying down a causeway of fascines and planks several miles long, while the landing place opposite was even more difficult, being boggy and overgrown with brushwood.

The Turks had entrenched themselves on the heights facing Satanovo, their left protected by the fortress of Isaktchi. A battery of

fifteen heavy guns commanded both the proposed site of the bridge, and the causeway. Two divisions of infantry were told off to force the passage. The Emperor Nicholas was present to witness the attack. But fortunately for the Russians, before the bridge had even begun to be constructed, the Turkish position was carried by a *coup de main*. A battalion of chasseurs had been brought up as a reinforcement by the flotilla. A tribe of Zaporogue Cossacks who had migrated from Russia into Turkey in the reign of the Empress Catherine, and had done good service to the Porte in former wars against Russia, now suddenly returned to their former allegiance; they had settled on the banks of the Danube, where they plied the trade of fishermen; they now did excellent service to Russia, for under cover of the flotilla, they carried over the Chasseurs in their light fishing boats, unperceived by the enemy, and landed them a little below the Turkish entrenchments. With great boldness, this small body stormed the nearest redoubt, and the Turks—numbering more than 10,000, mostly cavalry—were seized with a panic, and fled precipitately, part to Isaktchi and part to Bazardjik.

The 3rd corps now crossed into the Dobrudscha, and Isaktchi surrendered at the first summons. The main body, which the Emperor accompanied, commenced its march to the south on the 11th June. It did not exceed 16,000 of all arms, for it had detached four columns of from two to three thousand strong, with a few field pieces, to summon the smaller forts of Isaktchi, Matchin, Hirsova, and Kustendje, which threatened both its flanks. This was done in the hope that these places would offer no resistance—a hope, which the result fully justified, for by the time the Russians appeared before them Brailow had fallen, and one after another they surrendered without firing a shot.

We have seen that the 3rd corps did not cross the frontier till a month after the 6th and 7th corps. Yet in spite of this delay, and of the slowness of its subsequent march (it took fourteen days to reach the line of Trajan's Wall, a distance of only seventy-five miles) it was still too soon, if its further operations were to be conducted in combination with the other corps. Silistria, far from being taken, as had been calculated upon, was not yet even invested. The 6th corps, to which the siege operations had been assigned, had failed to cross the Danube at Oltenitza. The 7th corps was still detained at Brailow, for though the place had capitulated on the 18th of June, ten days had been agreed upon for its evacuation. The 3rd corps was therefore unsupported, and with Shumla and Silistria on its flank and rear, an advance upon Varna would have been most hazardous.

Moltke is of opinion that if the 3rd corps had moved boldly upon Silistria, before the garrison had been reinforced by the brave defenders of Brailow, the place might have been taken by a *coup de main*, for the works were both faulty in construction, and much out of repair. Had they succeeded in their attempt, they might then have taken the works of Turtukai in reverse, and opened the passage of the Danube to the 6th corps.

As it was, the 3rd corps remained inactive at Karasu for eight days,

and then continued its march leisurely towards Varna by way of Bazardjik. It was on this march that the Russians first came into collision with the Turks in the open field. The Seraskier had sent forward a reconnoitring force of nearly 8,000 men—mostly cavalry. And the Russian advanced guard somewhat rashly attacked them without waiting for their supports. The Turkish horsemen charged with their usual impetuosity; the Russian cavalry were repeatedly driven back, and it was only the steadiness of their infantry that saved them from defeat. It was not till the artillery came up that the Turks were finally repulsed.

On the 11th July the 7th corps from Brailow joined the main Army at Bazardjik. Towards the end of the month it was further reinforced by the troops which had been observing Silistria, and which were relieved by 10,000 men of the 6th corps from Wallachia. This force had been obliged to make a long detour in order to cross the Danube at Hirsova, having, as we have seen, been unable to force a passage at Oltenitza.

The insufficiency of the forces detailed for the war was becoming every day more apparent. The main Army collected at Bazardjik did not exceed 25,000 men, of whom only 2,500 were cavalry; the investment of Silistria was incomplete. The two divisions of the 6th corps left in Wallachia barely sufficed to keep in check the garrisons of Widdin and Rustchuk, while the force detached against Varna, which consisted of only 5,000 men, was utterly inadequate to invest a fortress with a garrison of double its numbers.

More especially was the want of light cavalry felt throughout the war. Most of the cavalry that the Russians had brought—with the exception of a few regiments of Cossacks—was heavy cavalry. Even that which was called light was not really so, for Moltke states that the Russian Hussar was more heavily equipped than the Prussian Cuirassier. With their large heavy horses they were quite unequal to cope with the active and well mounted irregular Turkish horse even at the beginning of the campaign; much more so, as we shall see, when scarcity of forage, and overwork had begun to tell upon them.

The small number of Cossacks employed in this war is said to have been caused by the fear of lack of forage, but it was in fact the want of light cavalry that made them unable to collect forage. The Turkish cavalry always move in large bodies, which made it hazardous to send out patrols or weak advanced guards. The saying that where you see one turban you may be sure there are a thousand more, is a very true saying.

It was here decided to change the line of operations; and the column quitting the direct road to Varna advanced in the direction of Shumla.

It will now be necessary to look back, and see what measures the Turks had adopted to meet the enemy's advance. It is evident that the Porte had contemplated the possibility—if not the probability—of a Russian army landing near Constantinople. Their undisputed command of the Black Sea, where they had a fleet of 16 line-of-battle ships, 6 frigates, and 7 corvettes, made such an undertaking quite feasible.

Besides this, the Sultan's reforms were very unpopular with the greater part of the Mahomedan population, and an outbreak in the capital was at any time to be dreaded. The bulk of the Army was therefore detained in and around Constantinople, until the advance of the Russians made it absolutely necessary to send forward an army to check their progress.

We have already seen that the Principalities were entirely denuded of troops, while the numerous fortresses on the Danube and in the Dobrudscha were but inadequately garrisoned. It must, however, be borne in mind that the inhabitants of a Turkish fortress instead of being a source of weakness are really a source of strength, every Turk being in possession of arms and well practised in the use of them.

When the Russians crossed the Pruth the passes of the Balkan were still unoccupied. It was not until the 31st May, when Brailow had already been besieged for fourteen days, that the Seraskier—or Commander-in-Chief—left Constantinople for Schumla. On the 3rd of July the Capudan Pacha or High Admiral—whose occupation afloat was gone—marched with a large force to Varna. Lastly the Grand Vizier only quitted the capital at the beginning of August, for Adrianople. But for the unaccountable deficiencies and consequent delays of the Russians both the Turkish lines of defence might have been broken before any effectual measures had been taken to hold them.

But by the time the Russian Army had directed its march upon Shumla, this neglect had been in a great measure remedied. The Seraskier had succeeded in assembling at that point a force of about 32,000 infantry—including 10,000 Arnauts or Albanians, undisciplined but fierce and dauntless soldiers—and 13,000 cavalry. Whatever may have been his military capacity—or incapacity—the Seraskier was a man of great energy, and he set to work at once to improve and to extend the fortifications of the place.

For more than a century Shumla, as I have already remarked, has been looked upon by the Turks as the main bulwark of the Empire, and in all their wars with Russia it has been occupied as an entrenched camp. In 1774, and again in 1810, it successfully resisted the attacks of the Russians, and we shall see that throughout the whole of the campaigns of 1828 and 1829 it again defied all their attempts to make themselves masters of it. Whether its defence on this occasion was not too dearly purchased by the neglect of still more important points is another question.

The position of Shumla is a very striking one as you approach it from the north or from the east. It stands on a plateau some eight or nine hundred feet above the great plain of Bulgaria forming a spur from the Balkan, but separated from the main range by the valley of the Kamstchik. The town itself is not fortified. It is, however, effectually protected on three sides by a chain of wooded hills which form as it were an amphitheatre round it, while the fourth is defended by a continuous line of works carried along the outer ridge of the plateau and abutting at either end on precipitous heights. This line consists of earthworks with a deep but narrow ditch, and its length is about 8,000 paces. To the north of the town lies the en-

trenched camp occupied by the barracks of the infantry. The cavalry were picketed in a sheltered and well watered valley a little in rear of the camp. 500 yards in advance of the fortified front a chain of redoubts was extended across the plain. Several roads converging upon Shumla afforded means of obtaining supplies from districts not occupied by the enemy.

An assault upon a place so strong, and held by so large a garrison, was of course not to be thought of, nor indeed would the possession of Shumla have been an unmixed advantage to an invading army. It would, it is true, have made its flank more secure, but it would not have opened the passes of the Balkan, from which it is too far distant. On the other hand the large force which was shut up in the entrenched camp would have been set free to occupy those passes and bar the further progress of the Army.

A complete investment of the place was equally out of the question, not only on account of the extent of country that would have to be guarded, but because of the danger to the investing force from the frequent and vigorous sorties of a garrison so strong in cavalry. Had Varna by this time been hardly pressed, as it might well have been, the Russian Army might have taken up a strong position at some distance from the place in the hope of drawing the Seraskier out of his entrenchments for the relief of that fortress, but the siege of Varna was still unaccountably delayed for want both of guns and of men.

Under these circumstances it was decided to make at least a partial investment of the place, and the Russians proceeded to throw up a chain of redoubts in front of the Turkish lines. They had, however, the great disadvantage of being within range of the enemy's heavy guns, to whose fire their own field-pieces were unable effectually to reply. At the same time they had the mortification of seeing long strings of camels laden with provisions and ammunition entering the camp daily from the hills behind the town. This led to an attempt to close the approaches from that side, but it was found too hazardous on account of the vigorous sorties made by the garrison, and it was soon abandoned.

Things continued thus for many weeks, the sorties of the Turks becoming every day more daring. Colonel Chesney relates that the most daring of these sorties were led by Hemin Pasha, whom he states to have been the Mameluke who alone escaped from the massacre of his comrades at Cairo in 1811, by leaping his horse over the ramparts of the citadel. His ambition was to capture the Emperor, who was present with the Army at that time, and to exact as his ransom the restitution of the Crimea to Turkey.

On the 27th August, the Seraskier made a night attack—a phenomenon, Moltke remarks, in Turkish military history—on two of the principal Russian forts. One of them was successfully stormed, and the guns carried off in triumph. On the 10th September he made a still more vigorous attack before daylight with a force of 8,000 men, but fortunately the Russians had been warned by their Bulgarian spies, and were prepared to meet it.

At length the Russian General perceived the uselessness of persever-

ing in the investment. The army had lain for more than six weeks before Shumla, exposed to the fearful heat of a Bulgarian summer; insufficient food, and bad water, had filled the field-hospitals to overflowing, and there was no place of security to which their sick could be removed. Scarcity of forage and over-work were carrying off their horses at the rate of more than a hundred a-day, and their reduced and enfeebled cavalry was no longer able to protect their convoys from the flying columns of Spahis which hung about their communications.

Moltke points out that during these months—August and September—the position of the Russians was everywhere critical. The blockade of Silistria was altogether ineffectual; the siege of Varna had only just begun—and not under promising auspices, while Wallachia was seriously threatened by the enterprising garrisons of Widdin and Rustchuk. Had the Turkish commanders shown half as much capacity as they did energy, the result of the campaign could not but have proved disastrous to the Russians.

The siege of Varna had been formally opened by the Emperor on 3rd of August. The Russian fleet, under Admiral Greig, had arrived a few days before bringing reinforcements, and had anchored a mile and a half from the town prepared to take part in the siege. The besieging army, under Prince Menschikoff, did not at this time exceed 9,000 men, but early in September it was reinforced by the 2nd corps and a division of the Guards, which raised its numbers to 18,000 or 20,000, and enabled Menschikoff to complete the blockade. But still there was no battering train, though Brailow had fallen on the 18th of June. "The fate of this battering train," says Moltke, "is involved in mystery. After the fall of Brailow it was absent everywhere." They were obliged to make shift at last with ship guns.

On the other hand, the Capudan Pasha, whose departure from Constantinople we have already mentioned, had arrived at Varna on the 17th July with 5,000 men, mostly artillery, and had entered the place under the very eyes of the Russians. The garrison now numbered 15,000 men, of whom nearly half were Albanians. The walls were armed with 162 guns.

I must refer my hearers for all details of this memorable siege to the two chapters that Moltke has devoted to this subject. It would be impossible to abridge them without their losing all their interest. It was of vital importance to the Russians to make themselves masters of the place without delay, for their situation was becoming critical; their daily losses were heavy; disease was rife in their camp—it was said even the plague. The position of the main Army before Shumla was precarious; and a large army, under the command of the Grand Vizier himself, was advancing to the relief of the place. The siege operations were therefore pressed with all the vigour possible. Nothing could exceed the energy and perseverance of the assailants, unless it were the determined courage of the defenders. The latter, long after the siege had commenced, maintained their positions outside the walls, and surrounded themselves with a labyrinth of lodgments which sometimes interfered with the Russian approaches. The

siege was carried on more by means of mines and galleries than by batteries, and though several practicable breaches were made by the explosion of the mines, and even a lodgment effected on one of the bastions, the ardour of the defence never slackened. Colonel Chesney relates that the Capudan Pacha worked with his own hands to close the breach, and adds, that "he encouraged his men with a stick!" The fierce obstinacy with which the Arnauts defended the ditch to the last, neither giving nor receiving quarter, is almost incredible. Moltke's remark is indeed true,—that defence only begins with a Turk where it ends with any other troops.

Meanwhile the Grand Vizier's zeal had cooled, and halting his army on the Kamstchik, he sent Omar Pacha with 15,000 men to attempt the relief of Varna. Omar advanced within a few miles of the fortress, and then, in Turkish fashion, he entrenched himself strongly at the village of Kurtepe.

Prince Eugene of Wurtemberg was sent to dislodge him, and was making arrangements to do so when he received peremptory orders from the Emperor to attack the position in front. The Emperor had been led to believe that the Turkish force was much weaker than it was, nor was he acquainted with the rugged and wooded nature of the ground which made their position almost unassailable. So thick was the wood that the Russian guns could not be brought into action, and the battle was a succession of hand-to-hand encounters. The result was undecided, but the gallantry of the Russian troops had a great effect upon the Turks; and though Prince Eugene had to fall back, and the road to Varna was open to him, Omar Pasha did not avail himself of the opportunity. He remained inactive in his entrenchments, though the explosion of mine after mine must have warned him that the fall of Varna was imminent. And when, after a few days, he saw the Russian flag floating over the ruins of the fortress, he made a precipitate retreat beyond the Kamstchik. For fourteen days this relieving force had been within five miles of Varna without rendering any assistance to the hard-pressed garrison.

The fall of Varna was, after all, the work of treachery. It seems strange that the Commander who had conducted so heroic a defence should turn traitor at the last. There is, however, no doubt that the intelligence of some intrigue that was being carried on against him at Constantinople led Yussuf Pacha to betray his trust. Accompanied by a large body of followers he sought the Russian camp, and threw himself on the mercy of the Czar. The gallant Capudan Pasha refused to surrender, and retired into the citadel with several hundred men. The siege had lasted eighty-nine days, twenty-seven of which with practicable breaches. Two-thirds of the garrison had fallen, and Varna was a heap of ruins.

There may perhaps be some few here present besides myself who remember the deep interest with which the progress of the siege of Varna was watched in England. A war between Turkey and Russia was not, however, supposed at that time to be fraught with such serious consequences to the balance of power in Europe as it has been of late years, nor were our sympathies with the defenders height-

ened as in the case of Kars and Silistria in 1854 by the gallant part that our countrymen took in the defence.

I have only time to notice briefly the siege of Silistria. It commenced on the 21st of July, at the same time that the main Army arrived before Shumla, and the investment of Varna began.

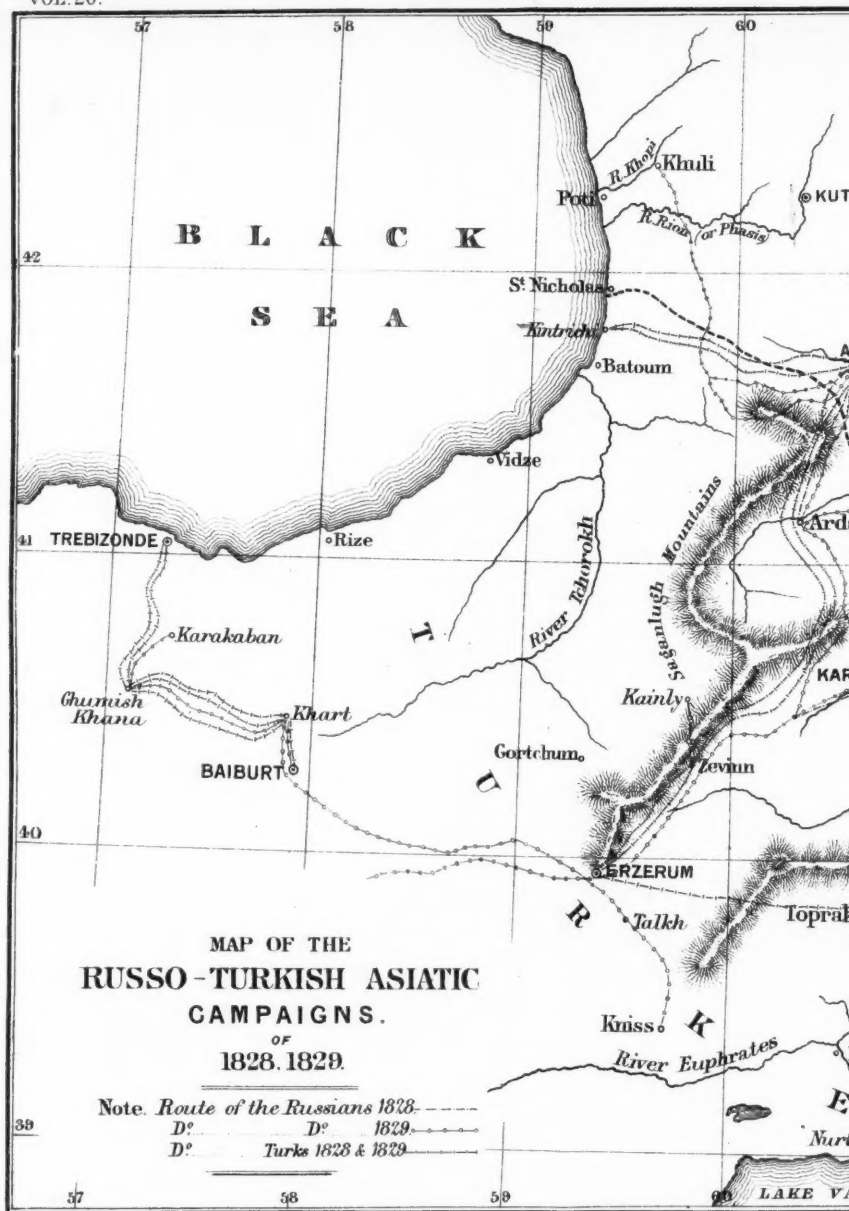
Silistria has played an important part in every war between Turkey and Russia. It commands one of the most practicable passages of the Danube, and threatens the flank of an army advancing upon either Shumla or Varna. It was taken by the Russians in 1810, and razed to the ground; but it was soon rebuilt. In 1828—and indeed so late as 1854—the fortifications of Silistria were very imperfect. It had no regular outworks—only a few lodgments, as Moltke calls them, in front of the gates, which would otherwise open on the plain. It is surrounded by a low rampart and a dry ditch, which one of the English defenders of the place contemptuously described to me as being what a good hunter would take in his stride.

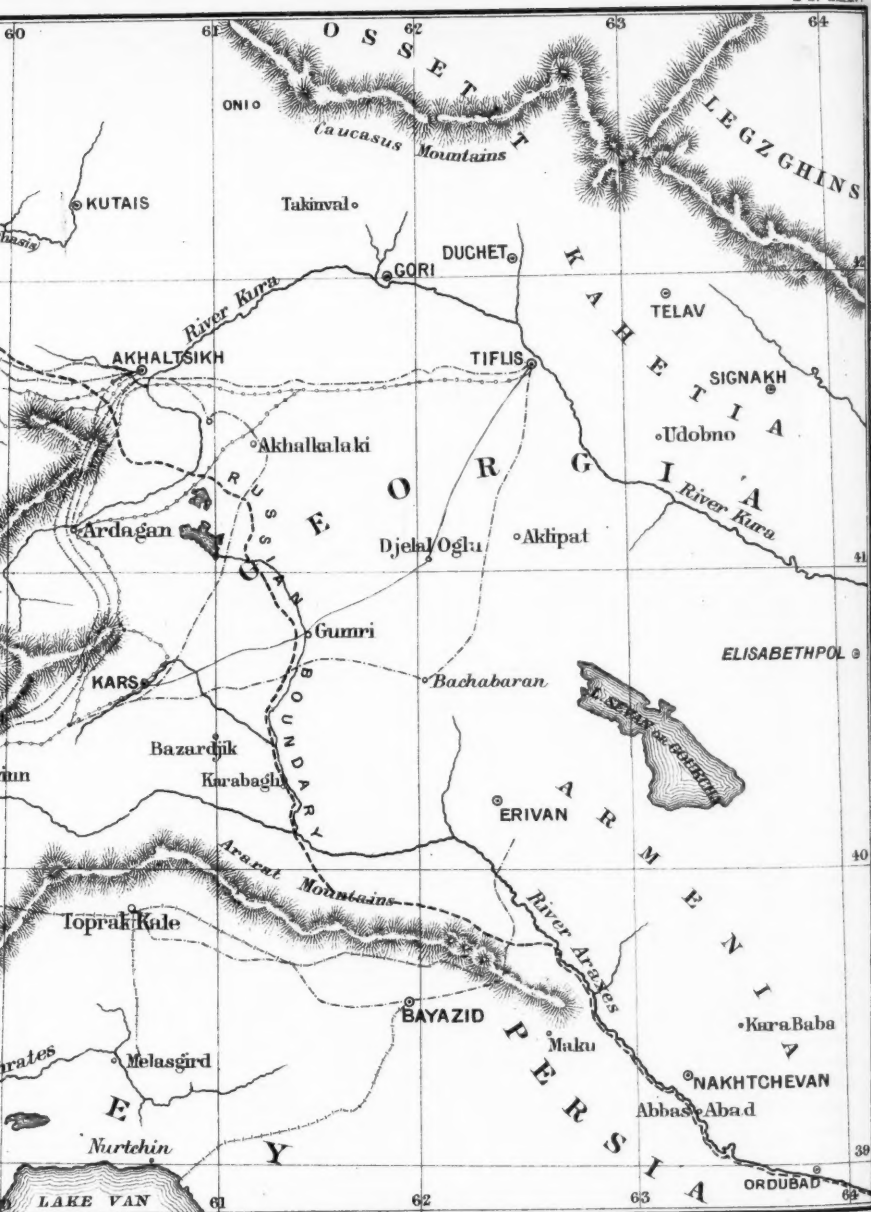
The place is commanded from the adjacent heights, and is also within range of the opposite bank of the Danube, which at this point is only a thousand paces in breadth.

The garrison had been reinforced by a part of those of Brailow and the small forts of the Dobrudscha, and the town contained about 6,000 inhabitants capable of bearing arms. A Russian flotilla of thirty-six vessels reached Silistria on the 10th August, but it was of little use. It did not even capture or destroy a very inferior Turkish flotilla which was aiding in the defence, nor was any attempt made to throw a bridge across the river, which would have facilitated the arrival of supplies and secured a safe line of retreat. In the middle of October the besieging force was raised to 30,000 by the arrival of the 3rd corps.

Finding that the place could not—or rather, would not—be taken, it was decided to convert the siege into a blockade, but the weather had now broken up. Incessant rain flooded the trenches, followed by snow and piercing cold. Sickness increased to an alarming extent, and on the 10th November, after an ineffectual attempt to terrify the garrison into surrender by a bombardment of forty-eight hours, the siege was raised. The retreat, though unopposed, was disastrous; the roads were so deep that it required 200 men to drag a single gun; after undergoing severe hardships the besieging Army at length succeeded in recrossing the Danube at Hirsova.

The season was now too far advanced for further operations, and it was decided to place the army in winter quarters. The 6th and 7th corps were cantoned in and around Varna and Pravadi; the rest of the army in Wallachia and Moldavia, excepting the Guards who were moved back into Bessarabia. The line occupied by the Russians extended from Varna to Crajova, a distance of 250 miles, and it was cut in two by the Danube. Only in presence of such an enemy as the Turks could such winter-quarters have been taken up with impunity. But the Turkish Irregulars, who were the most likely to harass them, had disbanded themselves on the approach of winter and returned to





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their homes in Asia. "They had," they said, "left their winter-stock-ings behind."

In summing up the results of the campaign, we find that after the fall of Brailow, and the small forts of the Dobrudscha, the only real success had been the capture of Varna—how hardly won we have already seen. Shumla and Silistria had defied all the efforts made to take them, and in the numerous engagements that had taken place in the open field, the results had been quite as often favourable to the Turks as to the Russians.

As Moltke remarks, "When we consider the enormous sacrifices that the war cost the Russians in 1828, it is difficult to say whether they or the Turks won or lost it. It remained for a second campaign to decide the value of the first."

We must now cast a glance at what had been going on during this time on the Asiatic frontier of Turkey; but it will not be necessary to enter into much detail, as the military operations in that quarter had only been important in so far as they had obliged the Turks to divide their forces.

Until the year 1801 the Caucasus had formed the southern boundary of Russia, and the Turkish frontier had been a very defensible one. Her actual frontier was far less well defined.

The war between Russia and Persia, which had begun in 1826, had just been brought to a successful close by a winter campaign, and General Paskevitch's army was now disposable for operations against Turkey. It consisted of about 30,000 men with 130 guns.

To this force the Turks were at first able to oppose only a small and disorganised army.

The campaign opened with the siege and capture of Anapa by a naval force, assisted by a detachment from the Army of the Caucasus. But before Anapa had fallen, the Russian army had begun its advance from Tiflis. It moved in three columns, the right towards the Black Sea, the left towards Armenia, and the main body towards Kars. On the 14th June, about 15,000 men crossed the Araxes near Goomri, an important Russian frontier-post, now strongly fortified, and continued its march unopposed to Kars, where it took up a position south of that fort, between it and the Army of the Seraskier.

It is unnecessary to describe a place so well known as Kars has since become. It had always been one of the bulwarks of Asiatic Turkey, and had successfully resisted Nadir Shah in 1735 and a former invasion of the Russians in 1807.

On the present occasion it did not uphold its former (or its future) fame. The weak walls of the suburbs were soon breached, and the suburbs themselves occupied after a short but sharp resistance. The fall of the town followed within a few days, and on the 23rd of June the Pasha surrendered the citadel. The relieving army was actually within sight when the place fell. 150 guns and large stores of ammunition fell into the hands of the Russians.

The plague now broke out in the Russian camp; this delayed fur-

ther operations and gave the Seraskier time to collect some 35,000 men, with whom he took up a position in front of Ardegan. This movement prevented Paskevitch from advancing upon Erzeroum, as he would have left this army in his rear, so he made a demonstration against Ardegan, which caused the Pasha to beat a hasty retreat across the Saganlugh mountains. He then doubled back and appeared unexpectedly before the strong fort of Akhalkalaki, which was taken by storm after a short bombardment. The garrison resolutely refused to surrender, and two-thirds of their number perished in the assault.

I may here mention that the inhabitants of this bleak mountainous part of Asia Minor are among the hardiest and bravest of the subjects of the Porte, and, I may add, the most fanatical.

Paskevitch next moved against Akhaltsik, a still stronger place. Short as is the distance, it took him ten days to reach it, so difficult was it to carry troops and guns through that densely wooded and mountainous country. He arrived just in time to take up a strong position commanding the west front of the fortress, and to throw up some entrenchments, before the Seraskier appeared with a large force to relieve the place. The Pasha imprudently divided his force, and after an obstinate resistance the Russians succeeded in carrying his whole position. The Seraskier, after losing 10 guns and 1,700 men, threw himself into the fortress with several thousand men. The rest of his army dispersed.

The defence of Akhaltsik was as heroic as that of Brailow. After a lodgment had been made in one of the bastions, the Russians advanced to the assault. For thirteen hours the garrison maintained a desperate resistance; the Russians fought with equal obstinacy. At length they carried a howitzer by hand across the ditch and placed it on the flat roof of a church. A shell set fire to the town, which continued to burn throughout the night, lighting up the fierce conflict. At daybreak the fort surrendered, being no longer tenable.

After the fall of Akhaltsik nothing of any consequence was undertaken by the main army, but the left wing had made itself master of the important town and fortress of Bayazid. This secured to the Russians the possession of the whole country as far as the Saganlugh range, which furnished them with a good base for the operations of the next year's campaign.

We must now return to the more important theatre of war in Europe, and relate the events of the decisive campaign of 1829.

The command of the Russian Army had been transferred to General Diebitsch, who had served in the preceding campaign as Chief of the General Staff. He joined the army in Moldavia at the end of February, and applied himself diligently to the re-organisation of all departments of the service. The cavalry was remounted, and the front ranks of the Hussar regiments armed with lances as a better protection against the swords of the Spahis; the Cossacks were increased to 22 polks, or regiments, of about 250 each; the Commissariat was provided with 2,000 Asiatic camels, a mode of transport well suited to the plains of Bulgaria.

The constitution of the four corps d'armee remain unaltered, but

several changes were made in the commands. Count Pahlen commanded the 2nd corps, General Krassowski the 3rd, General Roth the 6th, and General Rudiger the 7th. Altogether the army amounted to 48,000 infantry, 16,000 cavalry, and 4,000 artillery with 300 guns. This force was not larger than that with which the previous campaign had opened, but it was stronger in artillery and light cavalry.

But before the army began its advance operations had already commenced by sea. The possession of a secure harbour south of the Balkan was of the utmost importance before attempting the passage of that range. It would save the difficult and laborious task of transporting military stores across the mountain passes, and would facilitate the provisioning of the Army.

Bourgas would have been the most suitable spot but for its proximity to Aidos, where the Turks had assembled a large force. Sizeboli was therefore selected, and so early as the middle of February it was occupied by a Russian squadron without serious resistance. It had the advantages of a strong position and a safe harbour, but was at a greater distance from the Russian line of operation than Bourgas.

The Seraskier was ordered to advance at once from Aidos and retake the place, but he delayed obeying the order for several weeks, and when at last he arrived before Sizeboli he found the Russians too firmly established to be dislodged.

Nor was a subsequent attempt by sea more successful. The Turkish Admiral on his way to Sizeboli fell in with a solitary Russian frigate, which he took; and then he thought it best to return to Constantinople with his prize.

No further attempt was made to retake the place, which remained in possession of the Russians throughout the war.

The advance of the Army did not commence till May. The weather and the floods were assigned as the cause of this delay, but in truth the preparations were not completed earlier.

Part of the 2nd and 3rd corps now crossed the Danube at Hirsova and joined the 6th and 7th corps, which had wintered around Varna. The other divisions of the 2nd and 3rd corps were detained in Wallachia, awaiting the construction of a bridge at Kalarasch a little below Silistria.

Diebitsch was forced to open the campaign with a siege, which ought not to have been left for the second year of the war. The capture of Silistria was an absolute necessity before the Army could advance. Its garrison was large, and it commanded every possible line of operation. Diebitsch arrived before it on the 17th May, and found it exactly in the condition in which it was left in the preceding autumn. The besieging army amounted to 15,000 men (shortly increased to 21,000) and 88 guns. The garrison, with the armed inhabitants, numbered some 20,000. Diebitsch proceeded with great caution. He would not even assault when there was a practicable breach. He had learnt to respect the Turk behind a stone wall, and preferred the surer though slower process of mining.

After a brave defence of forty-four days the place surrendered, and the garrison became prisoners of war.

Diebitsch had, before the conclusion of the siege, handed over the command to General Krassowski, and had joined the main Army at Shumla. Important events had already taken place in that quarter, and this time the Turks had taken the initiative. The new Grand Vizier, after re-organizing the motley force he had found at Shumla, had quitted his entrenchments on the 16th of May and advanced in the direction of Pravadi with some 20,000 men, hoping to overwhelm the force under General Roth. The 6th and 7th corps were very weak from the losses of the preceding campaign, and the sickliness of their winter quarters around Varna. They did not muster more than 14,000 effectives of all arms.

On the 17th the Vizier reached the village of Eski Arnautlar, where a force of Russians—3,000 strong—had taken up a well chosen position covered by five small redoubts. These the Vizier instantly attacked with his left wing, while with his right wing he assaulted the entrenched works of Pravadi. Both these attacks were repulsed after fifteen hours of hard fighting, and Russian reinforcements coming up during the night, the Vizier fell back upon Shumla. Such vigorous action was a great contrast to the supineness of the late Grand Vizier. Reschid Pacha had set his troops an example of personal bravery, and both he and his second in command had been wounded.

On the 28th May the Vizier again quitted Shumla at the head of 40,000 men, leaving only four regiments to guard the entrenched camp. He directed his march upon Kustendje.

It was the intelligence of this move which had decided Diebitsch to leave Silistria. It was his intention to march with as many men as could be spared from the besieging force upon Pravadi, to form a junction with the 6th and 7th corps, and then to throw himself across the road from Pravadi to Shumla, so as to intercept the Pasha's retreat and force him to fight in the open field. Should he succeed in doing so, he felt confident that discipline would prevail over numbers. This bold decision decided the fate of the campaign and of the war. The force with which it was undertaken numbered 21,000 infantry, 7,000 cavalry, and 146 guns.

Time will not allow me to relate the movements of the two armies which preceded the decisive battle. The Vizier seems to have remained in total ignorance of Diebitsch's plans, and was retracing his steps leisurely towards Shumla expecting to have to deal only with General Roth's weak force. But on the forenoon of the 11th June, 28,000 Russians barred his further passage. The battle so much desired by Diebitsch took place at Kulewtcha. The Turks resolutely attempted to cut their way through, and for some hours their efforts were successful. The Russians lost great numbers of men and several guns; but when at length they had succeeded in driving the Turks back to their original position, which was a very strong one, a sudden panic seemed to come over them. They broke their ranks and disappeared singly in the thick woods. Scarcely a prisoner was taken, but the whole of the artillery and baggage fell into the hands of the Russians. The Vizier with 600 horsemen succeeded in reaching Shumla in safety by a circuitous route. Within a fortnight the bulk

of the Army also found its way thither by twos and threes. "A Turkish Army," as Moltke observes, "is not easily destroyed, it is only dispersed."

The former campaign was lost by the inactivity of one Grand Vizier. The present was lost by the too enterprising spirit of another.

Diebitsch at length found himself in a position to attempt the passage of the Balkan. Shumla, indeed, was still in the hands of the enemy, but without an army, Shumla was of little importance. A corps of observation would suffice to keep its beaten and disheartened garrison in check. The fall of Silistria was hourly expected. With the Dobrudscha, and the sea for a basis an advance would no longer be hazardous. The season was favourable, for the great heats had not yet set in. The health of the Army made it desirable that it should quit its present unhealthy positions.

All these were arguments in favour of an immediate advance, but the Russian Army was too weak for such an undertaking. Diebitsch had but 25,000 men in all, and if he detached 10,000 to mask the entrenched camp of Shumla, there would remain but 15,000 available for active operations. It seems unaccountable that the experience of the last year's campaign should not have taught Russia the insufficiency of her preparations. Four precious weeks were lost while awaiting the fall of Silistria and the arrival of the besieging force.

On the 15th June, Diebitsch removed the head-quarters to the neighbourhood of Shumla. It gives an awful picture of the horrors of this war to read that while crossing the battle-field of Kulewtcha the escort of the Commander-in-Chief was regularly attacked by an enormous pack of dogs, which were devouring the corpses of the slain.

At length the force under General Krassowski arrived. It was left to watch Shumla. General Roth with the 6th corps was ordered to advance along the coast roads leading from Varna to Bourgas, while General Rudiger with the 7th corps was to cross the mountains by the road from Pravadi to Aidos. General Pahlen with the 2nd corps was to act as a reserve to both these columns. The head-quarters accompanied the reserve.

Meanwhile the Grand Vizier, alarmed for the safety of Shumla, chose this very moment, when the Russian Army was in full march for the Balkan, to order a force of nine regiments of regular infantry, and several thousand Albanians, which had been allotted for the defence of the passes, to join him in the entrenched camp.

Consequently the two Russian columns, which had advanced to the Kamstchik, effected the passage of that river at Kiuprikoi without any serious opposition. The head-quarters with the reserve followed closely, and on the tenth day after leaving Shumla, the whole Russian Army was assembled around Roumelikoi to the south of the Balkan-range, and in free communication with the fleet.

In this short time it had accomplished a march of above a hundred miles through an unknown and difficult mountainous country. The passage of the Balkan had, after all, been effected by one single route.

Aidos still lay before them on their line of march. It is a town of some 25,000 inhabitants lying at the foot of the Balkan, and, though unfortified, was very capable of defence. The Vizier, alarmed when too late by the Russian advance, had hastily sent a force of from ten to twelve thousand men across the mountains to occupy this important post; but they made but a weak defence, and the 7th corps quickly drove them out of the town and took possession of it. The filthy state of the Turkish camp at Aidos is said to have sown the seeds of the diseases which from this time forth raged among the Russian troops.

Diebitsch's Army was by this time reduced to less than 25,000 men of all arms; but it had a secure basis at Bourgas, and an ample supply of provisions. Intelligence had been received from Adrianople that there were only a few thousand men collected for the defence of the city, and that no serious resistance need be anticipated. Diebitsch, therefore, decided to advance, knowing the effect that the possession of Adrianople would produce at the capital, and sent on the 2nd corps as an advanced guard.

The rest of the army did not at once follow, for a report had reached the head-quarters that the Pacha of Rustchuk had effected a junction with the Vizier, and that the Russian line of communication was seriously threatened. This report induced Diebitsch to concentrate his forces, and to move along the foot of the Balkan to Slivno, about 70 miles west of Bourgas. Rumour had exaggerated the danger. He found only a small force at that place, which he quickly dispersed, and he then resumed his advance upon Adrianople, from which he was no farther than he had been at Aidos.

The Turkish Army was now thoroughly demoralized. Fortified positions were abandoned on the approach even of cavalry unsupported, and it was clear that any measure however bold might be ventured upon with impunity against such a foe.

Indeed the only enemy the Russians had to encounter on the march was the intolerable heat, aggravated by scarcity of water, for the Turks had destroyed the fountains along the road. Fever was increasing in the camp at a fearful rate, and it was with difficulty that the enfeebled troops could accomplish a daily march of ten miles.

At Buyuk-Derbend there is a formidable defile, but happily for the Russians it was undefended.

At length, on the 19th August, four weeks after crossing the Balkan, 20,000 men, enfeebled as we have seen by disease, encamped before the gates of Adrianople. Out of a force of 70,000 men, with which the campaign had opened in May, this was all that could be brought together for a further advance of more than a hundred and thirty miles upon the capital. It would scarcely be too much to say, looking at it from a military point of view, that the Russians were no nearer Constantinople at the end of the second campaign than they were at the beginning of the first.

Adrianople is an open town, and though its position is strong, it would have required a large force to hold it. The garrison, composed mainly of fugitives from Aidos and Slivno, had no heart for fighting.

and without waiting to be summoned they offered to capitulate. Diebitsch gladly accepted the offer with the conditions that they were to give up their arms, their standards, and their guns. These hard terms were accepted without hesitation, and the Russians marched into Adrianople, to use Moltke's words, "as into a friendly town, "where nothing but the garrison is changed."

Still Marshal Diebitsch's position was a critical one in spite of his success; and it caused so much anxiety at St. Petersburg, that a fresh levy of 90,000 men was ordered, lest the negotiations set on foot at Constantinople should fail. Rest, so far from restoring the health of the troops, seemed to aggravate the disease that had so long hung about them. Colonel Chesney, who was present at a grand review held at Adrianople some months later, states that there were less than 13,000 men of all arms on the ground.

But General Diebitsch put a bold face on the matter, and in order to strengthen the hands of the Ambassador at Constantinople, he advanced in three columns towards the capital. Report, fortunately for him, had magnified his force to 60,000 men, and as there was not even a show of opposition made to his advance, the weakness of his actual numbers escaped detection.

His boldness was rewarded, for the Porte, alarmed by the approach of the enemy, and still more perhaps by the fear of an outbreak in the capital, signed, on the 28th of August, the Treaty of Adrianople.

My time will not allow me to relate the events of the Campaign of 1829 on the Asiatic frontier. That campaign had no influence on the result of the war, nor was there anything remarkable in the operations on either side. The Turks displayed indeed somewhat more vigour and enterprise than they had done in Europe; not only did they take the initiative, but they did what is very foreign to their habits:—they undertook a winter campaign in the hope of recovering the ground they had lost in summer. On the 18th February, they made a bold but unsuccessful attempt to re-take Akhaltsikh by escalade, and when this failed, they commenced a regular siege. But a Russian force soon came to its relief and they were defeated with heavy loss.

The defection of the Pasha of Mush at this time deprived the Turks of some 12,000 Kurdish cavalry—a very serious loss. In every quarter success attended the operations of the Russians. In June, Paskevitch forced his way across the Saganlugh range, and after defeating the Army with which the Seraskier attempted to cover Erzeroum, he pursued him to the gates of that city and forced him to surrender.

He then advanced upon Trebizonde, but finding the country almost inaccessible for artillery, and meeting with a more serious opposition than he had expected from the warlike Mahomedan tribes of that mountainous district, he abandoned the project and fell back upon Erzeroum.

Some desultory fighting took place after this at Baiburt and at Bayazid, but intelligence of the signing of the Treaty of Adrianople put an end to hostilities before any decisive blow was struck. The

most serious result of the war in Asia was the loss of Akhaltsikh, which this Treaty handed over to Russia.

It will be unnecessary for me to make more than a very few general observations on the conduct of this war. Those who wish for a critical *résumé* of the operations of both armies will find it in the concluding chapter of Moltke's History. Such a war as that between Russia and Turkey cannot be judged by the ordinary rules of European warfare. The best recognised principles of strategy were systematically ignored both by Turks and Russians; by the former from sheer incapacity or inertness, by the latter from a more or less well-founded contempt of her enemy.

If we are to judge of this war simply by its results, it is certainly one of the most successful wars on record. It had the effect of greatly strengthening the influence of Russia in the east of Europe, and of heightening her prestige in the west. But it is another question whether it has in anything like an equal degree increased her reputation or given fresh proof of her strength, as a great military power.

The energy and determination of her officers, and the courage and constancy of her soldiers, under difficulties and trials of no ordinary kind are indeed beyond all praise; but a careful study of this war not only reveals an unaccountable want of foresight in her military administration, but leads one to doubt whether the power of Russia, at least for offensive warfare, has not been greatly overrated.

The most interesting question for us, especially at the present moment, is whether the campaigns of '28 and '29 will throw light upon any future war that may be carried on between the same combatants, and on the same ground. One thing is clear: which is, that, should such a war unhappily arise, it will take place under greatly altered conditions. I am looking at the question solely from a military point of view.

On the one hand, a Turkish army of the present day would be very different from what it was now nearly fifty years ago. The Nizam would doubtless be more efficient soldiers than they were then; but, if I am not greatly mistaken, the irregular troops, both horse and foot, which did such good service at Varna and Shumla, would be found to have lost much of that daring courage which made them prefer death to surrender. The Bashi-Bazouk of 1876 is but a sorry representative of the Spahi or Arnaut of '28 or '29. Nor is it to be expected that after so severe a lesson, the frontier fortresses—still less the passes of the Balkan—will again be neglected.

On the other hand, the Russians are not likely a second time so greatly to miscalculate the forces required for a successful invasion of Turkey. They cannot expect again to have the undisputed command of the Black Sea, which alone enabled Marshal Diebitsch to add the proud title of "Za Balkanski"—or crosser of the Balkan—to his name; and in crossing the Pruth they will feel that they are embarking upon an undertaking which will task to the utmost the strength of the Russian Empire to bring to a successful issue.

AN ACCOUNT OF THE CHINESE NAVAL ARSENAL AT
FOO-CHOW: TRANSLATED AND ABRIDGED FROM M.
GIQUEL'S PAMPHLET.¹

By Commander CYPRIAN BRIDGE, R.N.

DURING my service in China, I have had the good fortune of making the acquaintance of Lieutenant Giquel, of the French navy, whose name is pre-eminently distinguished amongst those of the group of able French Naval Officers who have lately exercised an important influence on the course of affairs in more than one ancient State in the far East. With his permission, I make use of an account published by him of the arsenal at Foo-Chow, and of the work done there. The importance of this establishment, and the results achieved in a very few years, are too striking to render necessary any apology for bringing them to the knowledge of the members of the Royal United Service Institution.

Object of the Arsenal.

The arsenal of Foo-Chow is not, as this designation might seem to imply, an establishment intended for the manufacture of arms and munitions of war. It is a collection of building-slips and workshops designed for the construction of ships, and having annexed a factory built for the rolling of iron in bars and sheets. The object in view in establishing it has been to furnish the Chinese with ships of war and transports, to instruct them in the methods of building and managing these vessels, and to take advantage of the metallic wealth, notably that of iron, possessed by the province of Fohtsien.

Reasons for Selecting the Port of Foo-Chow.

The harbour can be easily defended, as the entrance of the Min River is studded with islets and elevations well adapted to the reception of forts, and, some ten miles higher up, the hills along which it runs contract its course sufficiently for the laying down of a few torpedoes to render its passage absolutely impossible. The anchorage, quite accessible to vessels with a draught of water of 22 to 23 feet, was found to suffice for ships of the dimensions which it was decided to construct, and they could be moored alongside the frontage of the arsenal at the quays, which was necessary to facilitate the work of construction. Beforehand it was known that the province would

¹ "L'Arsenal de Fou-tchéou, ses résultats." Par Prosper Giquel, Lieutenant de Vaisseau, Directeur. Shanghai: 1874.

furnish iron, piles for the foundations of the workshops, that the coal of Formosa was not far off, and that manual labour was cheap.

Negotiations relative to the Establishment of the Arsenal.

M. Giquel had made the acquaintance of a distinguished Mandarin, his Excellency the Viceroy Tso-Tsong-Tang, when at the head of a Franco-Chinese corps, he had been engaged, in company with the troops under his Excellency's command, against the rebels in the province of Che-Kiang. On the conclusion of the campaign, at the end of 1864, the Viceroy had requested him to furnish a plan for the construction of a naval arsenal. The one submitted was not definitely approved of till the end of 1866, when the contracts between M. Giquel and the Chinese Government were signed.

Programme of Foundation.

The programme drawn up was as follows:—

1. Establishment of workshops and slips suitable for the construction of ships and their engines.
2. Establishment of schools for the education of leading men in the constructor's department, of captains, and of engineers for the ships.
3. Engagement of a sufficient number of Europeans to conduct the works and to instruct the Chinese.
4. Laying down of a patent slip, on Labat's system, similar to that at work at Bordeaux, for the repair of vessels.
5. Establishment of an iron-foundry for rolling bars and sheets out of the pigs of rough iron furnished by the province, and the old iron that can be procured in China.

Beginning of the Works.

At the beginning of 1867, some preliminary works, such as the quarters for the *personnel* and the storehouses, were taken in hand; but it was only in the month of October in the same year, on the return of M. Giquel from a voyage to France to collect the necessary *matériel* and the staff, that the works of the arsenal, properly called, made a real start. The residents of Foo-Chow still remember the surprise and doubt experienced by them when they saw the bare paddy-fields upon which the works had to be erected. None of the plant purchased in France had arrived; the founders of the undertaking were at a port without resources in the shape of machinery and European implements. However, it was necessary to set to work; a small square hut, the only one on the ground, served as a smithy; in it were built two forges, and from them were turned out the first nails. With native carpenters, pile-drivers were constructed for driving the piles, and the laying down of a slip was proceeded with, on which, three months afterwards, the director—with appropriate solemnities—laid the keel of a transport. During this time, the embanking was vigorously pushed on by means of 1,200 men; for it was necessary to raise the ground five feet to elevate it above the highest rising of the river; and as the very natural impatience of the Chinese had to be

allayed when they wished to see results without delay, the construction of a series of wooden workshops was begun, in which were placed a part of the machines and tools as they arrived from France. These workshops still exist, and the arsenal presents the somewhat common spectacle in new establishments abroad, of buildings run up in haste standing beside permanent structures built with a perfect luxury of materials and workmanship.

Workshops and Building Works.

The following is a list of the shops, factories, &c. :—

The *Iron-works* (*usine métallurgique*), in which are the buildings for the large forges and rolling-mills, include a space of 5,011 square yards. The large forges are provided with six steam-hammers, one single-action hammer, with a power of 138 cwt., made at the arsenal, one double-action Farcot hammer; the remaining four are single-action and smaller. There are sixteen fires for heavy jobs and six reheating furnaces. This factory has up to the present (February, 1874) turned out the forgings for nine marine engines of 150 horse-power, including the shafts and cranks. There have also been forged the large pieces, such as bower anchors of 27 cwt. and boats' davits, required as ships' fittings.

The *Rolling mill* (*atelier des laminoirs*) has six furnaces and four apparatus—one for sheet-iron, one for stout iron and angle-iron, one for small sizes, and the fourth for copper. They are worked by an engine of 100 horse-power. They can, working day and night, turn out 3,000 tons of plate iron a year.

The *Metal mill*, or coppersmith's shop (*chaudronnerie*), has one engine of 15 horse-power. Besides the current work of the arsenal, setting-up boilers sent out from Europe, fitting ships, &c., this shop has completed fourteen boilers, of four and five furnaces, intended for engines of 150 horse-power, with the necessary tubes.

The *Fitting shop* (*ajustage*) employs an engine of 30 horse-power. It can turn out machinery to the extent of 500 horse-power a year. It has actually turned out seven marine engines of 150 horse-power, and two others are in a forward state.

The *Setting-up shop* (*montage*) occupies a space of 950 square yards.

The *Foundry* (*fonderie*) has three smelting furnaces, capable of casting pieces of fifteen tons. It has turned out an average of twelve to fifteen tons of castings a week, such as cylinders, condensers, &c., for engines of 150 horse-power.

The *Chronometer shop* (*chronometrie*) is divided into three sections, one for the manufacture of chronometers, one for that of optical instruments, and a third for that of compasses.

The *Smithy* (*petites forges*) has forty-four forges and three steam-hammers.

The *Locksmith's shop* (*serrurerie*) occupies a space of about 600 square yards.

There are also a *Steam saw-mill* a *Pattern shop*, and a *Joiner's shop*.

There are three *Building slips*, with sheds on both sides, and a large *mould loft*, in which the lines of ships can be traced the full size.

Masting sheers, able to lift weights of forty tons, and a *patent slip*, on Labat's system, complete the plant necessary for naval construction; the latter can haul up ships of over 300 feet length of keel, and 2,500 tons displacement. The ships on it are hauled up "broadside on."

In addition to the above, there are *Stores*, *Schools*, and *Quarters* for the staff of the establishment, both European and Chinese.

The total extent of the ground occupied by the arsenal is 117 acres.

There are three French schools—the *School of naval architecture*, the *Drawing school*, and the *Schools for apprentices*. There are also three English schools—the *Naval school*, in which mathematics and the theory of navigation, &c., are taught; the *Seamanship school*, on board the training-ship, *Kien-wei*, and the *Engineering school*.

In the latter schools, M. Giquel has had the assistance of some of our countrymen, Captain R. E. Tracey having been placed in charge of the training-ship, a post in which he has been succeeded by Captain P. P. Luxmoore, C.B.

The European staff consists of, at present, 52 persons. The native *employés* of this truly great establishment amount to 2,600 men.

During the astonishingly short time of seven years, M. Giquel has not only constructed an arsenal from its foundations, but he has actually built, and, in a great part, engined fifteen ships of war; one a corvette of 250 horse-power (450 I.H.P.). See accompanying list.

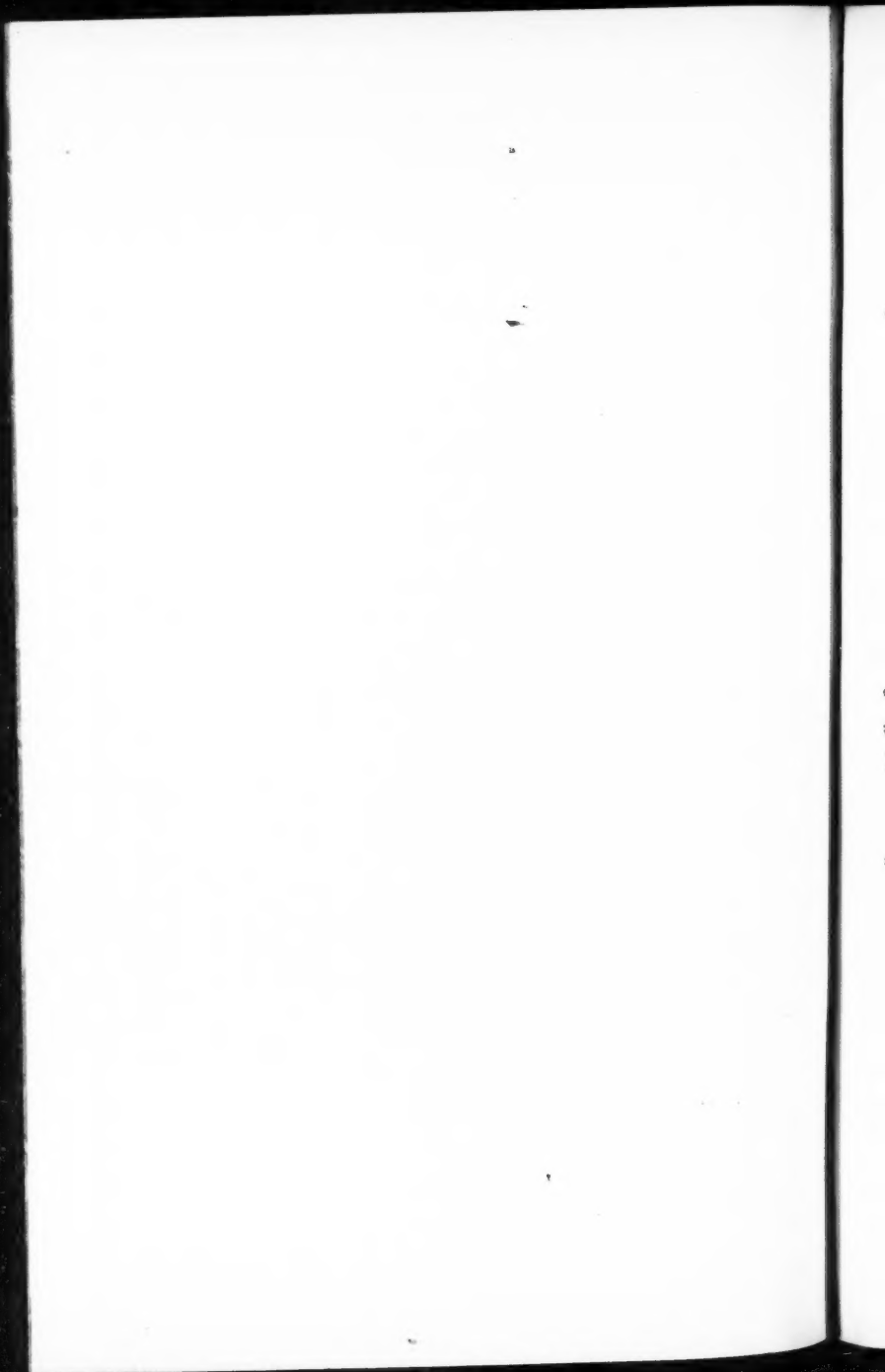
In a letter to me, dated August 29th, M. Giquel says:—"Instead of fifteen vessels, there are now eighteen launched; the three latter are similar to the one called *Foo-Po* [No. 4 in the list], and we have begun building composite vessels; two are at present under construction."

That M. Giquel has been able to do all this, in spite of the formidable difficulties in his way, is a remarkable proof of the energy and sagacity which he has brought to the direction of the important work he had undertaken. The very ground on which the arsenal is built had to be made. The soil of the site was alluvial, formed by a thick layer of solidified mud, covered with a coating of nearly liquid clay; a site about as unfavourable for a naval yard as could well be imagined. The freshets of the river obliged him to raise the level of the ground five feet above that of the original paddy field, on the unstable soil of which the works had to be established. He has succeeded wonderfully, and has not only placed the Chinese in possession of a valuable arsenal and a respectable squadron, but he has also taught many of them how to equip and manage the vessels which his ability has enabled them to construct.

List of Ships built at the Foo-chow Arsenal.

No.	Launched.	Name.	Class.	Displacement.	H.P.	I.H.P.	No. of guns.	Comple- ment.
				Tons.				
1	June 10, 1869	"Wan-Nien-Teing"	Transport	1,450	150	150	6	100
2	December 6, 1869	"Mei-Yünc"	Gunboat	515 ^{1.00} ₁₀₀₀	80	130	3	70
3	May 30, 1870	"Fou-Sing"	"	515 ^{1.00} ₁₀₀₀	80	130	3	70
4	December 22, 1870	"Foo-Po"	Transport	1,258 ^{2.40} ₁₀₀₀	150	150	5	100
5	June 18, 1871	"Ngan-Lan"	"	1,005 ^{4.00} ₁₀₀₀	150	150	5	100
6	November 28, 1871	"Tcheun-Hac"	Gun-vessel	572 ^{5.94} ₁₀₀₀	80	140	6	70
7	April 23, 1872	"Yang-on"	Corvette	1,393 ^{3.80} ₁₀₀₀	250	450	13	200
8	June 3, 1872	"Fei-Yünc"	Transport	1,258 ^{7.40} ₁₀₀₀	150	150	5	100
9	August 21, 1872	"Tsing-Yüan"	Gun-vessel	572 ^{5.94} ₁₀₀₀	80	140	6	70
10	December 11, 1872	"Tcheun-Wei"	"	572 ^{5.94} ₁₀₀₀	80	140	6	70
11	January 2, 1873	"Tsi-Ngan"	Transport	1,258 ^{7.40} ₁₀₀₀	150	150	5	100
12	August 10, 1873	"Yong-Pao"	"	1,391 ^{0.62} ₁₀₀₀	150	150	3	100
13	November 8, 1873	"Hac-King"	"	1,391 ^{0.62} ₁₀₀₀	150	150	3	100
14	January 6, 1874	"Tchen-Hang"	"	1,391 ^{0.62} ₁₀₀₀	150	150	3	100
15	End of February, 1874 ..	"No. 15"	"	1,391 ^{0.62} ₁₀₀₀	150	150	3	100

N.B.—Besides maintenance and repair of the training-ship and the steamers attached to the Arsenal.



OCCASIONAL PAPERS, NOTES,

AND

NOTICES OF BOOKS.

This portion of the Number is reserved for Articles, either Original or Compiled, on Professional Subjects connected with Foreign Naval and Military matters; also for Notices of Professional Books, either Foreign or English.

It is requested that communications, or books for review, may be addressed to

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PRUSSIAN DRILL, 1876.

By Colonel E. NEWDIGATE, Commanding Rifle Depôt.

A NEW edition of the regulation drill of the Prussian Infantry has been issued to the German Army. The great experience of this nation upon the field of battle, the immense amount of thought and study she has devoted to the art of war, and the high state of efficiency into which her troops are brought after a very short period of service, cannot fail to give importance to this work. In it we have embodied all the latest changes and orders upon the subject of drill which have been issued up to the 3rd of March, 1876.

The work still bears on its title-page the original date of the 25th of February, 1847, and from that time until 1870 no new edition was published. Numerous addenda had, however, been added from time to time, more especially in 1867, after the Austrian war and the introduction of the breech-loading rifle. The edition of 1870, dated the 3rd of August, was not issued to the army until a year later, when ample time had been taken to consider how far the changes it contained were in accordance with the experience of the battle-field. King William was at the head of his army at Mayence when he signed its introduction, and as the troops were already in the field, the delay in its issue can be easily explained. It was no time then to make alterations in drill. The effect would have been to unsettle those troops which had not practised the new formation, and the consequences might have been disastrous. As it was, however, the heavy losses in the earlier battles made it peremptory that some modifications in the old system of attack should be introduced even during the war. This old system was the attack by whole battalions formed either in line, three ranks deep, or in the attacking column, *i.e.*, a double column on the centre with skirmishers on the flanks. The losses which the Brigade of Guards and others suffered in these close formations caused the King to issue an order that company columns were to be employed. This formation had long been introduced into the drill book; but it was not until 1870 that it was established as the fighting formation for infantry.

In the following year (4th July, 1872), a cabinet order was issued from Berlin, calling upon General Officers to practise some further changes which were considered necessary on account of "the disproportionately heavy losses which had been shown by experience in the last war to result from the employment of closed battalions under fire in level and open ground; and, on the other hand, of the success which had attended a widely extended use of company columns and strong lines of skirmishers." In this order twelve points were comprised, all relative to the dispersed system of fighting,

upon which reports were to be furnished at the end of the drill season.

In the next spring, an order, dated 19th March, 1873, directed that the proposed additions should almost entirely be embodied in the drill regulations. There is, however, one point which should be noticed. It was proposed that "the supports" should be allowed "to follow the skirmishing line not only in line and in column, but also in extended order, with the groups (sections) either opened out or closed;" but the *opening out of the supports* was not sanctioned in the order of 1873, neither has it been inserted in the present edition.

In the latter we have a few further alterations, but they come in here and there as additions. There has been no attempt to remodel the work; it still remains the drill book of 1847, with the modifications rendered necessary by the introduction of modern fire-arms. Much that has been considered unimportant has been struck out, and the whole comprises nine pages less than the last edition.

It is especially worthy of remark that the rapidity, strict dressing, discipline, and the perfect steadiness in the ranks for which the Prussian Army is proverbial, are now considered more necessary than ever. At the same time the training of the individual soldier requires even greater care, for each man must also thoroughly understand the art of skirmishing; he must be more self-dependent; and he must learn to think for himself, not only in extended but also in close order. The company now forms the important sub-unit for battle, and the men composing it must be able to drill equally well "whether the front or rear rank be in front, or however much the subdivisions or sections of the company may be inverted." For all of this, individual intelligence is required, and the men are obliged to make use of their heads, instead of being mere machines, moved by word of command.

The present edition of the regulations is divided, as formerly, into five parts, and subdivided into chapters as follows:—

PART I.

Instruction of the Individual Infantry Soldier.

- Chapter 1. Instruction without rifle.
 " 2. Instruction with the rifle.
 " 3. Manipulation with the rifle for non-commissioned officers : carrying the colour, and the sword exercise for Officers.

PART II.

Upon the Squad and Company.

- Chapter 4. The squad.
 " 5. Formation, telling off, and dressing of a company.
 " 6. Manipulation of the rifle and firing of a company.
 " 7. Movements of a company.
 " 8. The company column and dispersed order of fighting.
 " 9. Formations for particular objects.

PART III.

The Battalion.

- Chapter 10. Formation in three ranks; dressing; manipulation of the rifle; firing, and movements of a battalion in line.
- „ 11. Formation of column from line.
- „ 12. Movements in column.
- „ 13. Formation of line from column.
- „ 14. Formation in two ranks (fighting formation.)
- „ 15. Squares.
- „ 16. The assembly.

PART IV.

Upon the fight of a battalion, with special reference to dispersed fighting, and the employment of company columns.

- Chapter 17. Instruction of the individual soldier, and of the troops in dispersed order. Conduct of the Officers and non-commissioned officers.
- „ 18. The fight of a battalion; the use of skirmishers, and company columns in general.

PART V.

The Brigade.

- Chapter 19. Rendezvous and development.
- „ 20. Movements of a deployed brigade.
- „ 21. Parades.
- „ 22. Colours and their honours.
- „ 23. Signals, marches, and instructions for drums and fifes.

In the following remarks we shall not attempt to enter into minute details as to the actual formations, positions of Officers, &c., &c., for in these matters there are *no changes*; but we shall endeavour to show what is the present system of tactics in force in the Prussian Army.

PARTS I AND II.

The first seven chapters remain almost as they were in the edition of 1847. In 1870 the instructions for countermarching were added to the company drill, and taken out of that of the battalion. This movement has now been struck out of the book altogether, because “it must be a matter of indifference to the troops, both at drill and in the field, which rank is in the front, and whether the right or left flank is at the head. The men must therefore be practised individually and collectively in divisions (*Abtheilungen*) in carrying out whatever movement may be ordered with the subdivisions “(*Züge*) in inverted order and out of their usual succession” (Section 34.)

The formation in three ranks is still retained; but for parade

purposes and route marching only. It has been the Prussian formation for years, and consequently all the reserves who have been through her ranks are familiar with it. Probably this may be a reason for retaining it. For parade purposes it has the advantage that the front of a company is one-third less than if it were in two ranks, but on the other hand Jäger Battalions are only formed in two ranks, and the additional width of front improves the appearance of their companies in marching past. For all fighting purposes the formation in three ranks is an obsolete formation. Formerly there was a meaning in the third rank: it was composed of the best shots and most adroit men. These formed the third subdivision, "*Zug*," of a company, called the skirmishing subdivision. In a battalion formed for battle these four *Züge* were placed under the command of a Captain selected for the purpose. In an "attacking column" (a term which has entirely disappeared from the drill book of 1876) the *Züge* were placed two on each flank; and when in line, two in rear of each flank. This system was altered in the book of 1870, when the skirmishing *Züge* were always formed in rear of their own companies, and they ceased to be placed under a Captain appointed for the purpose.

Now, however, all the subdivisions of a company have to act as skirmishers; the best shots are distributed equally among the companies (Section 15), and although as a rule the skirmishing *Zug* is first extended, it is a matter of no importance which of the three is so employed.

The transformation of a company of three ranks in line into a column of three subdivisions in two ranks is decidedly an intricate movement, and it is quite at variance with the principles of Prussian drill that the memory should be "clogged with a multiplicity of "formations;" but, at the same time, it is equally contrary to them to break down what already exists for the purpose of re-building entirely anew. The three rank formation is well known, and it is remarkable to see the rapidity with which a company, either advancing or retiring, suddenly breaks off and forms itself into a company column, and then remains perfectly steady. This in itself is a most useful practice for the men, because it accustoms them to find their places—a most important point in the "dispersed order of fighting," which we come to in Chapter 8.

The expression "*dispersed order*" must not be understood to refer only to the extended line of skirmishers which forms the front or firing line, but also to the breaking up into smaller bodies of all troops when in contact with the enemy. It is the subdivision of a battalion into four company columns, acting subject to the orders of the battalion commander as independent units, and the partition again of the companies into *Züge* and half-*Züge* and sections. It is the change which has been made from fighting with whole battalions, either in line or column, under command of one voice, to fighting in smaller fractions, each under its own chief, and each possessing, in proportion to its strength, a certain amount of independence of action. It is essentially the fighting system of the Prussian Army, and as the drill book is still retained in its old form, it is not surprising that we should

have to search in many parts of it for the additions which have been made relative to this subject. But the prominence given to company drill, and the important part which the company plays, are manifest from the large proportion of the drill book which is devoted to this subject, and the intimate connection which exists between skirmishing, dispersed order, and company columns, is the reason why we always find these three subjects treated together.

In preparing for action the companies are at once formed into company columns at quarter distance, viz., seven paces from front rank to front rank. If the subdivisions are 16 files in strength or more, they are divided into half subdivisions, but if less than 16, they are not to be divided. The formation takes place "out of step," *i.e.*, the men move off at once and form up as quickly as they can, quite independently, but remain steady as soon as they are formed. All movements of the column also are made "out of step." For instance, the company may be ordered to form line on the leading subdivision (either to the right or left on one subdivision to the right, and the other to the left), when the men move off at once and form as rapidly as possible. In order, however, to preserve the rifles from injury, they are never carried at the "trail" except when skirmishing, but at the "slope," and always ordered at the halt.

The present regulations have made some important exceptions to the rule of marching "out of step:" "Under the most effective rifle fire of the enemy, company columns are always to march in step. "In the bayonet attack by these columns, the rules for the bayonet attack of a battalion are to hold good." Thus, when supports and reserves are being brought up to the line of skirmishers for the decisive charge upon a position, every portion, however small, must be brought up in close order and with the same regularity and precision that was formerly required of a battalion.

Again we find another exception: "It must be rigidly enforced that retiring movements immediately after an attack are always carried out in step (not at the double), and that on these occasions that taut hold of the men is never lost."

These passages are most significant, and may be almost said to contain the essence of Prussian drill, the aim of which is to maintain strict discipline at the most critical moments, and to restore order as rapidly as possible after confusion. For this reason the greatest attention is paid to the steadiness of the men in the ranks. The perfect time, dressing, and carriage of the men in marching at attention, or "in step," is well known. When marching at the "shoulder" the arms are kept rigidly steady. At the "slope" the right arm is swung both by officers and men, and especially so when marching past a reviewing General. There is no half measure in this matter of swinging the arms any more than there is in any other part of their drill. They are swung with a will, and this movement is an assistance to the men both as regards time and dressing in marching.

Movements to be made "out of step" are preceded by the caution "*Ohne Tritt.*" The men open out and march as is most comfortable to themselves, but with their rifles at the slope. The moment, however,

the order is given "in step," everything is done, even at sham fights and field days, with the regularity of the barrack square. The supports, for instance, if under fire, are moved, halted, or fronted, and arms ordered by word of command with the utmost precision. The object seems to be to transfer to the dispersed order of fighting as much as possible of that command over the men which close order affords.

But it must not be supposed that this produces either slowness of action or inflexibility of movement. The reverse is the case. Nothing can be more flexible or handy than the company column. It can send out skirmishers just in the strength required; it can re-inforce them when needed; it can form one general and intermixed firing line and reform in company column with the greatest rapidity. Bayonet attacks are made by the company, or by the small detachments of it which are scattered as supports in rear of the skirmishers. In fact, every duty which formerly belonged to whole battalions is now the rôle of the companies.

But it is the last paragraph of the quotation which deserves special notice: retiring movements must not be made at the double, the men, on the contrary, must march in step, and must be kept tightly in hand. The expression "retiring movements" is worthy of notice; it does not necessarily follow that the attack has failed—a contingency that should never enter the heads of the men making it. But from whatever cause a retreat may be necessary, it is of the utmost importance that the greatest regularity should be observed. If once the men were allowed to double when exposed to fire it would be almost impossible to stop them, and the more the firing line had been previously reinforced by supports and reserves, the more hopeless would be the confusion, and the greater the risk of disaster. This short paragraph speaks with an eloquence which cannot be overrated; for it touches the weak point in the dispersed order of fighting.

So long as the fighting line is successful and re-inforcements are at hand to be thrown into it whenever required, all goes well; but when these have been used up and ammunition, perhaps, is also running short, then danger arises. At the commencement there are plenty of reserves. Every battalion has its two companies and every brigade (6 battalions) has either two or three battalions, forming a second line of battalions called the "third *Treffen*;" but in an obstinate fight these are soon dissolved, and only a very small portion of each battalion is perhaps left. To keep back the third *Treffen* as a reserve in the event of defeat would be contrary to the principle that you should make your attack as strong as possible; and the feeling that there was a force in rear to fall back upon might lead the first line into giving up too soon; whereas, if a sufficient re-inforcement had been sent into it victory would very probably have been the result. At all events, it would have been the best chance of securing it. We should here mention that the old rule that "the skirmishers are to fall back upon the battalion when they can no longer offer resistance to the enemy" has been struck out of the regulations; it belongs to an obsolete system. But to return: the attack, in spite of everything,

may fail, and then the difficulty of drawing back in an orderly manner would be very great. This difficulty is increased by the intermixing of men belonging to different subdivisions, companies, and battalions. It cannot be prevented altogether, but the regulations lay down that it should be avoided as far as possible; and that in re-inforcing the skirmishers, groups (sections) should be pushed up into the intervals between the firing groups, and not files between files. This is another advantage in skirmishing by sections, with intervals kept between them. It also applies equally to the half-subdivisions which first extend in front of a battalion. There is no reason why considerable intervals should not be left between these to be filled up later on by the other half-subdivisions which form the first re-inforcements. Everything must be fostered that tends to keep the men in hand, yet it is only by the constant practice of an orderly retirement—drawing back portions of the line by degrees, leaving only a few skirmishers to cover the movement, whilst the remainder move steadily to the rear and re-unite as quickly as possible in their different sections and subdivisions—that the danger of this weak point can be lessened.

The regulations for extending, for the movements, re-inforcement, and firing of a line of skirmishers, remain almost unchanged. A certain number of simple rules are given without entering into detail, as for instance:—

A half-subdivision only is to be extended in the first instance (this used to be a section only).

The files make a half-turn and move by the shortest way to take up the ground they are to occupy, or until halted.

It is a matter of no importance whether they remain one in front of the other or side by side.

An interval of a few paces is to be left between the sections in order to give the non-commissioned officers greater control over the firing of their groups.

In quite open ground the files must not open out more than six paces.

When moving, skirmishers carry their rifles at the trail, or for the sake of change, under the right or left arm like a sportsman.

Strict injunctions are given for the superintendence of the Officers at the firing.

Should it be necessary to fire during movements, the actual men must be named for this purpose.

“In rapid firing, in order to maintain strict *fire-discipline*, and to “avoid the useless expenditure of ammunition—so disadvantageous “in its consequences—it is well always to order the number of “cartridges that are to be expended.”

When closed re-inforcements are sent into the firing line they usually fire volleys, and volley firing must not be allowed to degenerate into rapid firing or independent firing.

It has been proved by target practice in the Prussian Army that the percentage of hits made by a squad firing volleys by word of command, is greater than that made by independent firing, even in extended order, and the better the volley the greater is the percentage of

hits. The reason given for this is that the word of command tends to calm the men, which is all-important in firing. A writer in the *Militair Wochenblatt* considers the habit of volley firing so essential in the present day, that he recommends its being practised, even for a few minutes only, on every occasion when the men parade with arms; that it should be repeated two or three times every day, and that the word of command should be given by different Officers or non-commissioned officers, with the view of accustoming the men to take orders from others than those to whom they are accustomed. In the last war, it is true that volley firing was seldom used, and when it was it always degenerated into independent firing; but this, he argues, is only a proof of the want of fire discipline and of the necessity of paying much greater attention to it in future.

With regard to the instructions as to the conduct of the skirmishers when attacked by cavalry, the regulations first describe how they may make use of the nearest cover, or form clusters round their leaders, or unite with the nearest supports. A new rule has now been added that "in many cases it will be advisable to leave the skirmishers in their position, especially if it affords any cover"—and the next chapter, which describes now a company column is to form square, commences with the remark that "against a cavalry attack it is not always necessary to form a company square, but should circumstances render it necessary, &c." And again, in Section 102, "upon the movement of the skirmishing line," there is another new passage to the same effect: "When attacked by cavalry the skirmishers must especially depend upon the efficacy of their fire, and it is therefore recommended in many cases that they should remain in their positions, particularly when the ground affords some cover." This principle that men must not as a matter of course run into close masses and form targets for the rifles and guns of the enemy on the appearance of a body of horsemen, was laid down in the order of March, 1873, and now for the first time is incorporated in the drill book. It is experience gained in war and speaks for itself. On the other hand, close formations will sometimes be necessary to resist a heavy charge, and instructions are given for firing upon cavalry in four ranks. This mode of firing is also sometimes used when the supporting Züge are brought up to the skirmishers in order to pour in the greatest weight of fire immediately before a final assault.

Great stress is laid upon the value of volley firing at this moment, which consists "not so much in the number of volleys, but in the calmness and coolness with which they are delivered." The closed detachments which are placed at intervals along the line in rear of the skirmishers must be practised in loading while moving. The bayonet attack may be carried out either in line or column, and after it has succeeded these closed detachments are to fire volleys.

This part of the book winds up with repeating the injunction that "Companies must be able to execute the simple formations and movements which are necessary for fighting under all circumstances, by day as well as by night, either rank in front, in inverted order, &c." "They must be able to deploy on the leading subdivision with the

"greatest rapidity and certainty, not only in close order but also in extended order, and towards either side—to the right or left, or simultaneously to both sides." And again "they must be able just as quickly to re-assume a formation suitable for some other phase of the combat. The training of a company must in short be such *that the captain has it always in hand, and so fully attentive to his orders, as to be capable even of executing what has not been specially practised beforehand.*"

PART III.

The Battalion.

Although so large a proportion of the drill book is devoted to instructions relating to company columns, the battalion is considered, as it has ever been, the principal unit for combat. This unit has to be subdivided into smaller sub-units, each acting with a certain amount of independence, but still remaining under the single guidance of the battalion commander. In 1866, when company columns were first used in action, the great disadvantage of their getting out of the hand of the battalion commander was experienced. Since then, the new regulations which have been issued all aim at preventing this evil in future. It is probable that the authorities had also this point in view, when they added the following paragraph to Section 91. "When the company columns of a battalion are formed in one *Treffen* (line of columns) at the deploying intervals of a battalion only, the battalion commander is to give the word of command "carrying out evolutions common to all—such as manual exercises, &c.—in the same way as with a closed battalion. When the company columns are not formed in one *Treffen*, or have a wider extension of front than the above, the captain takes up the word of command from the battalion commander."

The movements of a battalion formed in three ranks have not been changed, but their number has been considerably reduced. Of those that remain, some are not to be made the object of an inspection; they are not applicable for fighting purposes, and must not be regarded as a test of the efficiency of the battalion.

In Chapter 10 we have the formation in three ranks; dressing; advancing in line; retiring in line; diagonal march; passing obstacles and changing front. The latter is comprised in four lines: "The divisions are marched off and reformed in the new dressing line, unless it be desirable to form close column, or column on the centre." Until 1870 a line changing front on the centre (the colour) was one of the line movements. In 1867 a note was added that "this can be practised on the drill ground as a peace-exercise, because it helps to promote the adroitness of the Zug-leaders and men. It must never be made the object of an inspection." In 1870 it was struck out of the book altogether.

Chapter 11 gives the different modes of forming column from line. Forming column in front of a named division has been struck out, and

the formation of a column left in front is not to be a test of efficiency at inspections.

Chapter 12 contains the movements in column. These consist of marching in files, in sections, in half subdivisions, and in subdivisions; changing direction in open column; reducing and increasing the front of divisions in open column; marching in close column; wheeling, and the diagonal march; opening and closing a column; forming column on the centre from open or close column of divisions (Züge), and reforming open or close column from a column on the centre. Neither of the two last movements, nor the marching in file, is to be made use of at inspections.

Chapter 13, on the formation of line from column, consists of deployments to the right or left and to both flanks simultaneously; and deployment from column on the centre. The deployment to the right is forbidden at inspections.

This ends the movements of a battalion in three ranks, and they are, as before observed, only such as are required for a march past or for route marching.

Chapter 14, on "the formation of two ranks (fighting formation)" commences with a new section (77). It is a fundamental rule that when a battalion in three ranks has to take up a fighting formation this is to be done by forming company columns.

The change from a fighting formation into a three rank formation is made on the order from the battalion commander "Three ranks—form!" by the skirmishing subdivisions forming up in the shortest way as a third rank.

In forming these company columns from line, the companies on the right of the colour form columns of subdivisions (or half-subdivisions) to the left, those on the left of the colour form columns to the right. The colour and escort remain with No. 3 company, and move as a section in rear of the 3rd subdivision. Bandsmen join their companies.

So long as the two centre companies remain together, the senior captain of the two commands them, unless there is a second Staff Officer with the battalion.

The double column in rear of the two centre companies (column on the centre) is the established rendezvous formation of a battalion "because it facilitates the battalion commander's supervision of his troops, and from it any fighting formation can easily be taken up."

When the company columns of a battalion are opened out from one another, the battalion commander names a company upon which this formation is to be made, and the others move up by the shortest way.

The movements of a battalion in two ranks are made the same as when in three, and the skirmishing subdivisions remain as in the former edition, in rear of their respective companies. Under the heads of "The attack with the column" (Section 84) and "The bayonet attack with a deployed battalion" (Section 88), we find hardly any alteration since 1867. This certainly appears rather inconsistent with the positive orders against employing whole battalions

under the effective fire of the enemy; but the object of retaining them is no doubt for the guidance of the companies and subdivisions sent forward for the final charge, and which are directed to carry it out in the manner laid down for a battalion. The instructions run as follows: "Upon the order, *For attack, rifles on the right!* the battalion "bring the rifles to the right side and break into a quickened pace, "which is indicated by the beating of the drums without the fifes "playing. At a short distance from the enemy (about "12 paces) the order is given *Charge rifles!—Double!* upon which "the front subdivisions of the battalion bring the rifles to the charge, and the men rush upon the enemy with a loud hurrah!"

In the dispersed order of fighting such a thing as a battalion attack can hardly be expected to occur. But the bayonet attack carried out simultaneously by all the closed troops behind a long firing line, with all the drums beating the storm step, the dispersed bodies converging as they advance upon some special point—a previously arranged flank attack developing itself at the same time, and then the final rush and hurrahs of the whole, is, to use the mildest term, *most imposing*.

In the formation of the skirmishing line, great liberty of action is left to the battalion commander, who can employ whatever companies or subdivisions may be most suitable, but the rule given in Section 87 is first to send out half of the "skirmishing subdivisions" of the flank companies. These extend in front of the battalion, but are not allowed to open out more than six paces. The other halves follow to re-inforce the skirmishers when necessary. The remaining subdivisions of these companies follow in column as supports; and the two centre companies form the reserve. This is considered the *normal* formation when several battalions are working together, and the distances which, however, "may be increased according to the objects of the exercise," are given in Section 111 as follows: From skirmishers to re-inforcement 100 paces, to supports 150 paces, and to reserve or main body 150 paces, making a total of about 400 paces. This is dispersed order, but we cannot help observing that in this part of the book much of the obsolete system appears to be retained. Thus the two reserve companies, which are now specially termed the *Haupttreffen* are called the *Battalion*; and the skirmishers are to be guided in the direction of their march by the movements of the battalion. There are also instructions for clearing the front at the double, and forming up in rear of the flanks, which are quite inconsistent with the new order of things. But after a few pages we come to another Section (91) upon company columns, which begins with a new paragraph as follows: "The fundamental fighting formation of infantry is the "battalion formed in company columns. It is therefore a rule that "when a battalion prepares for fighting it must take this formation."

No fixed rules can be laid down for all occasions, either as to the number of companies to be sent forward or the intervals between the companies. The battalion commander must adapt his dispositions to the circumstances of the case and the end he has in view. As a rule, greater depth than width should be given to the formation; companies

must never be opened out so far apart as to be unable to support one another. The gradual development of the force must be considered; and one company at least must always be kept in reserve. "The battalion colour remains with the company in reserve, and in case this should exceptionally be dissolved, the first Zug of this company must, under all circumstances, remain with it."

Chapter 15 is upon "squares." This subject has already been referred to. That it is not considered necessary always to form square is evident from the new sentence with which it commences. "Should a battalion in two ranks have to defend itself against a cavalry attack by forming square, it will, &c."

Chapter 16, upon "the assembly," concludes this Part. The only alteration here is that the men always assemble in *two* ranks instead of in *three*.

PART IV.

"The mode of fighting of a Battalion, with especial reference to dispersed order and the use of Company columns."

In former editions the heading of this Part had special reference to the *vocation of the third rank*. Now it has reference to the *dispersed order of fighting*.

Chapter 17 contains "The instruction of the individual men and of the troops in dispersed order, and the conduct of the Officers and non-commissioned officers." Although there is not much that is new, the practical remarks are excellent:

Skirmishers must possess power of judgment, skill, boldness, activity, and self-confidence. In the use of their rifles they must be thoroughly expert. It is the special task of all Officers to cultivate these qualities among the men.

Skirmishers must move with freedom and without constraint; such matters as careful dressing, position, manner of carrying the rifle, number of paces between files, and such like, should never be mentioned.

They must be taught how to avail themselves of cover, and how a very slight wave in the ground will screen them from the enemy's fire. In order to teach this, squads should be opposed to one another.

No greater number of men should be extended than is rendered necessary either by the formation of the ground or by the strength of the enemy.

No firing to be allowed on single men at a greater distance than 250 meters, nor on larger objects, such as columns, artillery, &c., than 500 meters.

Long lines of skirmishers must have a few men sent out on the flank or a detachment echelloned towards the rear in order to cover the flank, unless it is protected by other troops or natural obstacles. Great attention is called to this point; and the files sent out on the flank are not only useful in preventing surprise, searching small covers, &c., but also in keeping up the connection between different bodies of troops.

As a general rule movements must be made at a brisk pace, but without doubling. The regulations say that "it is only on rare occasions that an exception to the rule is permitted," but it is under the head of these exceptions that one of the most important changes in the mode of advancing under a heavy fire is introduced, viz., *the advance by rushes*. After referring to the different occasions when it is proper to double, such as crossing a flat open space swept by the enemy's fire or driving the enemy from a position by a front attack when it is impossible to surround him on the flanks, and a rapid onslaught has to be made by the skirmishers, re-inforced to the utmost. The book goes on to describe "the advance by rushes" in the following manner:

"Under certain circumstances, and with due regard to the ground, it may sometimes be advantageous to execute the attack by making the skirmishers run rapidly over a tract of ground (60 to 80 paces) and throw themselves down in order to fire; then, after a short pause, to continue the advance in the same manner. The attacking movement may, however, be prolonged by such an advance, and, as it expends a great deal of strength, it must not be commenced, at the soonest, at a greater distance from the enemy than 500 paces."

This was ordered to be practised and reported on in the cabinet order of 12th July, 1872. It was included in the order dated 24th of March, 1873, and now for the first time is embodied in the drill book. The only points of difference in the three orders is the space to be crossed; the first says 50 to 80 paces, the second 50 to 60 metres, and the final order fixes it at 60 to 80 paces, and also forbids the advance in this manner at a greater distance than 500 paces from the enemy. These are matters of detail which no doubt had been deeply considered before definite conclusions were arrived at, and they are of great importance. It is the opinion held by many that the only way of advancing over that most dangerous zone—from 600 to 200 yards from the enemy—is by rushes, or at all events that this is the best means of reducing the losses; and for these reasons it should not be an occasional mode of advancing, but one that is constantly practised, and to which the men become thoroughly habituated. This is the only way of overcoming the objection that if once you allow the men to lie down you will not get them easily to make another advance; and it is likely that this objection carried weight when the decision was made that the space crossed in each successive rush should be as great as possible without distressing the men too much.

At 200 yards or less the supports are brought into the firing line. Soon after this the order is given to attack, and the drums beat the storm step. Finally "the whole—skirmishers and closed groups—run straight to the front so as arrive in a loose line upon the enemy, or else converge as they advance upon one or more points in the enemy's position previously indicated by the leader. In the latter case they run through the enemy's fire in loose order, and unite in more or less closed divisions (but always under the immediate command of their leader) in the enemy's line in order to roll him up or to oppose his supports."

As soon as skirmishers are no longer required, or are only needed in small numbers, they must be recalled. In the event of their being driven back they must at once rejoin their companies or battalions.

With regard to the conduct of the Officers and non-commissioned officers, they must thoroughly understand skirmishing on account of "the often decisive share that skirmishers in the present day "have in every fight." They must acquire aptness in dealing at once with circumstances as they present themselves.

They must strive never to let their divisions get out of hand, and they must *lead their fire*. They must indicate the distances and aim. They must take care that the men are sparing of their ammunition on the one hand, and on the other they must point out *the moments and objects which justify an increased expenditure of cartridges*.

All leaders of skirmishers must consider how they can get the shooting line, or a portion of it, nearer to the enemy. How they can surround him or make a flank attack; how they can take advantage of any mistake on his part, and so on.

It is only when there is danger in delay that re-inforcements must be sent by the shortest way into the firing line. At other times it must be considered how and where this can be done, with a promise of the best results, without intermixing the divisions, or interfering with their mutual connection by bringing them through one another.

Chapter 18 is on "The fight of a battalion, and the use of skirmishers "and company columns in general."

The introduction draws attention to the "offensive character" of a *concentration of the fire* for short moments upon single points; the *independently decisive* results which sometimes are produced by this, and the assistance which, under any circumstances, it renders to the attack which follows. Also to the importance of supporting the loose first line, when obliged to act on the defensive, especially as experience proves that the greatest losses always occur whilst retreating. It further says that in most cases there is very little use in occupying advanced points merely for a passing defence. It is far preferable as a rule to bring the forces which are to be employed in a defensive position into action in *one and the same line*, although by degrees.

"Infantry well instructed in firing can repulse by their fire every "attack *in front*. . . . The conviction must be roused and fostered in "the men that they are unassailable in front and that it is only when "they turn their backs that they have anything to apprehend."

Great importance is given to the protection of the flanks, and the further back the different supports of the first line are kept, the better will this object be attained.

As to the position and employment of skirmishers, no rules can be laid down applicable to all occasions. "The effect would only be to "paralyse the mind of the leader," there is, however, one *fundamental principle* insisted on "that the skirmishers are always supported by "the companies to which they belong." This is one of the advantages of the strong companies of the Prussian Army. They are fit for independent action, and the only rules laid down are that when detached for any special purpose their skirmishers must go with them,

and skirmishers are not to be employed without being supported by their own companies.

The employment of battalion columns under fire, however, is forbidden. The normal formation must be in company columns. The instructions contained here, and the illustrations given in the following section, are only applicable to the simplest phases of fighting, and only intended to show how troops are to be *instructed* in fighting.

Thus: in attacking, the object must be first to strive to get the firing line as efficaciously near to the enemy as possible in order to subdue his fire.

In the advance by rushes the supports also advance in this way, but the companies which form the reserve or third Treffen advance in the usual manner—not by rushes.

When a position has to be taken, or some special point gained, a sufficiently strong force must always be employed, as a failure is injurious to the *morale* of the troops, and only leads to useless losses.

The leaders of the skirmishing line—and this is now the place for the captains—must always be on the look-out for the best means of making themselves masters of the next section of ground, and act upon their own responsibility as soon as they are actually engaged.

Should the enemy appear to be shaken in any part of his position, the nearest supports must be brought up, and a concentrated attack made upon this point. As the troops draw together, the Officers must get them in hand again as quickly as possible to resist a counter attack. The divisions farther back must take the opportunity of gaining ground, whilst the enemy's attention is taken up with the attack, in order to oppose, either by volley firing or a bayonet attack, the reserves which he may be sending up in force.

Advice is given as to the selection of a defensive position. Shelter trenches may here be used with advantage, but they must be limited to affording cover for men lying down, and must on no account impede the advance later on. In the German Army several shovels for this purpose are carried by the men.

The increased efficacy of the fire gives great strength to the front of infantry, and points to the *attack on the flank* as the weakest point. The deep formation recommended affords protection in the defence, and the closed divisions kept back are available for being moved round in a circuit against the enemy's flank “who will easily be induced to “slacken his resistance on the firing becoming audible on his flank or “quite in his rear.”

All closed divisions now act almost entirely as reserves. Their office is to foster the skirmishers' fight, and they must often adhere closely to their movements. (We cannot quite understand why, in an early chapter, the skirmishers were directed to guide their advance by the battalion in rear?). It is most essential that the leaders of these closed bodies of men, of all ranks, should pay great attention to the mutual connection of the skirmishing line with its own supports and reserves, in order to guard against the intermixing of the different parts of the troops; and when obliged to support one body of troops with another this must be done if possible by sending them up on the side and not by intermingling them.

The next section is again "*on Company Columns.*"

The intensity of fire renders dispersed order necessary, but the partition of a battalion into smaller divisions than is actually necessary is strongly deprecated. Superior Officers must constantly *guard against letting their troops get out of hand*; and all subordinates, the *company leaders* in particular, must *rejoin their battalions quickly* after having accomplished their task. On the other hand the dexterous and independent leadership of the company Officers must be brought into play as much as possible.

Although it is again repeated that fixed forms for all the different modes of development in company columns cannot be laid down, some formations are given applicable in large combinations of several battalions at the same time.

The normal formation has already been given in our remarks upon chapter 14, but it is here that the terms "*Vortreffen*" and "*Haupttreffen*," are first introduced. The former is composed of the two companies (usually the flank companies) which are first sent forward to form the line of skirmishers and their supports. The "*Haupttreffen*" consists of the two centre companies which remain behind at first, held together as a half battalion and acting as the reserve.

It is a formation which can easily be taken up, either from the line of march, or from any formation in which the battalion may be; and on account of its depth is suitable either for attack or defence. The two companies in front can develop a strong firing line, and in this formation a crisis may be brought about by a bayonet attack, either by the two front companies alone with the supports coming up to the skirmishing line; or by the companies in reserve coming up and joining those in front; or these two latter companies may be directed against the flank and endeavour to surround the enemy.

Another advantage of company columns mentioned here is the facility with which they can take advantage of the ground for cover, as compared with a whole battalion; the smallest inequality of ground affords them cover, and even without this they offer but a small object of aim.

They can rapidly take up any formation that is required, and another point which is always insisted on is the facility with which a Commanding Officer can get his troops again in hand and re-establish the internal steadiness which may have begun to waver.

When a battalion is fighting alone, the company column system is suitable for carrying out the established principle in fighting: *never employ more forces than are necessary*. Some illustrations are then given of a battalion acting alone.

The fight begins with one company, of which half a subdivision only, or at most one subdivision, is extended. As soon as it has been ascertained where the enemy can best be attacked, or on what point he is going to make his attack, another company can be sent up to that side to prolong the line of the first company. We must here draw attention to the fact that the line is not to be prolonged by a subdivision of the first company, because this would deprive the skirmishers of a portion of *their own supports*, but another company

complete is sent up, thus carrying out the rule that skirmishers must always be supported by their own companies.

Later on it may be necessary to prolong the line still more, either on the same or on the opposite side, when a third company, with its skirmishers and supports, is sent forward.

Should the enemy now be shaken by the fire, or should any favourable point have been gained for a more severe attack, the fourth company can still be brought up in order to bring about a crisis. In the defence, however, when there are no other reserves present, this last company must be kept back as long as possible, for the purpose of making a counter attack, should the enemy attempt to bring about a decision.

Again, if a battalion is marching alone in the vicinity of the enemy, one company should be sent forward to act as an advanced guard, and this company should be preceded by skirmishers. Or if a battalion is moving prepared for action, when there are no other troops between it and the enemy, it must be preceded by scouts sufficiently far in front to prevent its coming unexpectedly under an effective fire. Should the skirmishers succeed in turning back the foe and gaining a position, the battalion must at once establish itself there. For this purpose the closed detachments must be at hand. It is in order to insure having these closed detachments in readiness, that so much stress is laid upon keeping the different sections of troops as intact as possible; also that all men who are not actually required in the firing line are at once to be recalled; and again that no more men should be extended than are absolutely needed on each separate occasion.

When a retreat becomes necessary, it is important that a portion of the battalion should be sent back to some point or ordered to take up a position, previously indicated, in readiness for the reception of the remainder; but on no account must any of them be sent back for the reception of defeated troops before a retreat has even been decided on.

The troops falling back should, if possible, retire on the flank of those formed up to receive them, and the position to be taken up by the latter should be selected with this view. When the enemy's cavalry are in the neighbourhood during a retreat, the skirmishers must not be left too far behind the other troops.

This part concludes by saying that, in the barrack square, the instruction of soldiers should be in all the formations for fighting, with the various phases they take in different kinds of ground, irrespective of the level nature of the parade ground. The correct employment of these various phases in accordance with the formation of the ground must be taught in the country. On the parade ground, skill in executing formations and evolutions; mutual understanding between the troops that are side by side and in rear of each other; cohesion and strict discipline can alone be taught and learnt. But this does not depend on a multiplicity of intricate manœuvres. A few simple forms, such as those previously given, are amply sufficient for fighting purposes.

"It is, however, unconditionally necessary that every battalion should be able to execute these with regularity and certainty under

"the most unfavourable circumstances—in bad ground, in the dark, "in inverted order, rear rank in front, &c."

And finally, neither the fatigues of long field days nor the privations of war must on any account cause the influence of the Commander over his troops, or their attention to his orders, to be lessened.

PART V.

The Brigade.

Chapter 19. "*Rendezvous and Development.*" A brigade is composed of six battalions, usually of two regiments of three battalions each. But the rules for a brigade hold good, however small a number of battalions may be collected together. If there are more than two they must be formed in two "*Treffen.*" We have no word which corresponds with this term, but it is used to express the bodies of troops which form the different lines.

The usual formation is to place the battalions of the junior regiment in the 1st *Treffen*, and those of the senior in the 2nd *Treffen*. Each *Treffen* is then commanded by the Colonel of its regiment.

When field evolutions are about to take place the battalions are formed in "column on the centre." Previous to a march they are formed in "close columns of subdivisions."

For evolutions a brigade is formed in three *Treffen*. That is, one battalion is placed in front as an advanced guard, or else one is moved back as a reserve. The distance between the different *Treffen* is 30 paces.

The *development* of a brigade consists in opening out to deploying intervals with 20 paces between the battalions, and gaining the full *Treffen* distance on the march. The latter must depend upon the circumstances of the fight, and must therefore be decided by the Brigade Commander. When no distance is specified, 400 paces must be considered as full *Treffen* distance. To economise space, however, on the drill ground, this may be reduced to 150 paces.

Chapter 20. "*Movements of a developed Brigade.*" The battalions are all in company columns. Those of the first *Treffen* advance in the formation already described with a *Vortreffen* and *Haupttreffen*. A battalion of direction must be named.

Great liberty of action is, however, left with the Brigade Commander, both as to the employment of the different battalions, and also in the position of the regiments. Instead of having the battalions of one regiment in the first *Treffen*, and those of the other in the second, he may place the regiments side by side, each having two battalions in the first *Treffen* and one in the second.

This arrangement has many advantages; it gives each regiment a deep formation, and prevents to a great extent the intermixing of the two regiments in action.

The attack of a brigade is only carrying out on a larger scale what has been already remarked upon, with the addition of instructions about the employment of the 2nd *Treffen*.

One battalion must be kept in reserve under the immediate orders of the Brigade Commander.

When advancing with one battalion as an advanced guard, this battalion commences the fight, but it must not extend its front too much. The prolongation of the front must be carried out by sending up battalions on the side of the one engaged, precisely upon the same principle as was illustrated by the fight of a battalion in company columns.

In *changing the front* of a brigade the battalions as a rule form columns. There are very few words said about this; the battalion on the turning point wheels into the new direction, the others move into the new alignment thus indicated, one after another, by the shortest way, and take up the dressing.

As a rule, changes of front are to be made "out of step, but in perfect order."

The change of front will, in most cases, be only slight, and wheeling a quarter-circle at full interval is forbidden. Should it be necessary to show a fighting front towards a flank, the nearest battalions must be employed, which will at once form a line of skirmishers with supports (a *Vortreffen*).

A slight change of front can also be made by advancing one wing and wheeling the battalion, which would then be in a short echelon formation.

The general observations which conclude this chapter again repeat the remark that the formations given are only examples of the most simple nature, and when employed it may be found that they require frequent modifications. "The attention of Brigade Commanders must never be diverted from the essential by retaining appointed forms." An example is then given of the employment of regiments by wings (*i.e.*, side by side), which is full of useful instruction.

The whole book, indeed, is full of valuable advice, which, being compiled from practical experience, must be beneficial to all students of the art of fighting; and yet throughout it is the *spirit* rather than the *letter* of the instructions that is insisted on.

As, however, our object has been merely to lay before our readers the present system of fighting in the Prussian Army, we shall now bring our article to a close. We must not, however, omit the concluding paragraph of this chapter, which has been added in the present edition. It is to the effect "That those in command over the different divisions of troops having to change about, it becomes essential for the due comprehension of their orders that the manner and wording of these should be similar under all circumstances. It is therefore laid down that no words of command or signals excepting those in the regulations are to be used by Commanders of troops. For the same reason, all laying down of rules or fancies (*Schematisirung*) is strictly forbidden, as tending to limit the free-play allowed by the regulations. No superior Officer may therefore issue written orders or explanations of the regulations.

"Above all, in order to insure that precise unity of action in the troops, which is so absolutely necessary for any special objects of the drill-ground or the field, a verbal order from the Commanding Officer, suitable to the case in question, must in all cases suffice."

THE GERMAN RAILWAY REGIMENT.

By Lieutenant H. E. RAWSON, R.E.

At a time when the question of the purchase of the whole system of railways throughout Germany by the State is being eagerly discussed by the Federal States, and Prussia has set the example in the matter by voting on the 2nd of May last, by a substantial majority in the Chamber of Deputies, the law ceding its railways to the Empire, there is a peculiar interest attaching to the organization which would be adopted by it for their management, and which is very clearly indicated by that which already exists in the PRUSSIAN RAILWAY REGIMENT.

It is for want of such a complete system, that the Italian Government, upon concluding the purchase of the South Austrian and Alta Italia railways on June 27th ultimo, has been obliged to stipulate that a private company should carry on the administration for the next two years, though as early as June, 1875, it had ordered that all Officers of the Army should go through a course of instruction in the technicalities of railway management. Quite three years must elapse before the vote of May 2nd can be carried through the Reichstag, and the Prussian railways finally handed over to the Empire, when the expanded organization of the regiment will be quite sufficient to meet the demands made upon it. Such a powerful branch of a military system commanding the respect of the whole world, needs no argument from the writer, to show the value of the subject touched upon in these pages, nor to assure its place among the three recognized arms of warfare, infantry, artillery, and cavalry, for to deny its right to be among them, is to shut one's eyes to the times.

The Prussians were the first nation to recognize, in a practical manner, the fact that the day had gone by in which it was possible for a general in command to conduct, simultaneously, the organization of the services required in maintaining the communications, as well as the military operations of the army. Wellington did it, Napoleon did it; but neither Wellington nor Napoleon had to deal with the question in the aspect it has assumed to-day, complicated as it is by the increased number of men to be provided for, the greater rapidity required in all movements, the more extensive scale on which military operations can be carried out by railways, and the larger area of country over which they are conducted. In the Peninsular war, convalescents, assisted by detachments from the main army, and organized by the General in command, were able, under the charge of the officer commanding the Corps of Guides, to ensure the lines of communication; but this was for an army seldom exceeding 40,000 men. The army sent into the field by Germany amounted to between 400,000

and 500,000 men, and to effect the concentration of this enormous force, required the transport of no less than 42,000 men daily to the frontier. It was completed in thirteen days after mobilization. In Jacquin's words¹, "on the 24th or 25th of July the railways were "closed to passengers and goods. Eleven days afterwards the concentration of the whole of the GERMANY army upon the western frontier "was terminated; two days later, the army was victorious at Forbach "and Frœschwiller. . . . FRANCE appeared ready the day war was "declared. Ordinary traffic on the railways was suspended on the 16th; "trains followed trains in rapid succession, and ten days later, 186,000 "men and 32,000 horses were disposed along the frontier." It is not to our purpose, to follow him in the picture he draws of the two armies at that time, except so far as is contained in the following sentence. "While France was in every respect in disorder and confusion, while "in Metz the Intendance Department was searching for its provisions, "the Corps for their kits, the Artillery for its ammunition, regularity "and order pervaded the whole of the operations of the German army." Prussia had recognized the important part railways had played in the American Civil War, had studied the successful application of organized bodies of workmen, civilians it is true, but bowing for the time to the severest military discipline, to the construction of railway works requiring rapid execution, to the destruction, and to the restoration of lines; had made trial of such a method for itself in the campaign of 1866, and had found that properly systematized, a new and most powerful arm might be developed. As the result of its experience, the army entered upon the campaign of 1870 with four Railway corps, subsequently increased to seven, for the three main lines of communication. They were but bodies of civilians and military intermingled; hastily associated, and provided with material for such operations as they were intended to carry out. They amounted in all to 800 men at the commencement, to 1,400 men at a later period of the war. But there was a method in their organization, there was order and precision in the way they were employed, and above all they formed a link in a chain which Prussia had long forged, had tested in 1866, and had pronounced sound and strong in the principles upon which it had been constructed. A system of ROUTE SERVICE (*Etappen-wesen*) which organized a special body to preserve the *lines of communication*, had been approved before the contest with Austria commenced, had been improved by the experience obtained, and was now put into practice against an enemy, who had not got as far as its own condition in 1866, and who was destined to give a proof in acknowledgment of its past blindness, by creating a Railway corps during the war. It succeeded in collecting a vast store of material in Metz and Strasbourg, only in time to fall with these places into the hands of the Germans. The results of the war of 1870-71 left Prussia in no wise content with what it had done; and it has pressed onwards with such vigour, in its attention to the organization of a military body capable of taking over the complete management of

¹ "Les Chemins de Fer pendant la Guerre, 1870-71." By M. Jacquin, Paris, 1872.

such lines of railway as may be employed, that whereas in 1870 it had not a man who had not to be specially mobilized for the Railway corps, it now possesses on a peace footing a railway regiment, and on mobilization an effective list of 326 officers and men in proportion. Such a result justly merits our attention.

A brief glance at the Railway corps employed in the American Civil War of 1861-65, will best show how far Prussia adapted the example to its own military system. The railway divisions of workmen formed in 1862 in consequence of the enormous extent of country traversed by railways, and the peculiar influence which they exerted upon the military operations, were placed under General MacCallum as general manager, with the title of Military Manager and Superintendent of the United States Railways. He was given complete control over the whole system of railways, and power to requisition what amount of rolling stock he might require. His first step was to form corps for constructing railway works, and for maintaining the traffic, and he concentrated the power over the whole in his own person. The engineers and workmen of all kinds who were associated together were civilians, and were employed temporarily as their services were required; but they were subject to severe military discipline; and it was this power, exercised alike by the military authorities and by the civil administration, which undoubtedly led to such excellent results being obtained. The important services which they rendered, gave rise to the institution of a similar body in Prussia. On 9th of May, 1866, the Prussian Minister of War published the basis of the organization for railway divisions to be formed in the case of mobilization. It stated the objects for which such a body was instituted, appointed the managing body, and specified the Staff, system of its formation, plant and functions. Three divisions were mobilized upon the declaration of war with Austria in the same year, and their employment forms an interesting chapter in a pamphlet translated from the German, "*De l'emploi de Chemins de fer en temps de Guerre.*" 1869.

Previous to this campaign, Prussia had formed a distinct body for carrying out a regular system of route service, and the experience obtained produced the "*Organization of Route Service,*" approved by the King on the 2nd of May, 1867, but not made public. Thoroughly tested in the campaign of 1870-71, this organization was found to be based on sound principles, but imperfect in some of its details: the principal of which, and that from which the others sprang, being the strain thrown upon the Route Inspector-General's Department in order to meet all that was required of it. Large additions were made to its numbers during the war; and the great exertions developed by it coupled with the ability of those employed, prevented any mishap. But it was admitted on all hands that no single department could, except under the most favourable conditions, carry out for the future the duties with which this department was charged, viz., assuring the connection between the army and its base of operations, forwarding all men, horses, supplies, stores and materials along the lines of communication, and regulating the employment of the railways. The task of

maintaining the railway traffic was entrusted to this department, upon the supposition that one line of railway could be placed at the disposal of each army composed of several corps d'armée; but the inconvenience which soon arose from the unequal distribution of rolling stock, and accommodation afforded by the various lines, clearly showed the necessity of placing the whole system of railways under some central authority. The Executive Staff at the Royal Head-Quarters were therefore, during the remainder of the war, charged with the general direction of the railway transport, and control over the Railway corps. But this measure, though it relieved the Route Inspector-General's Department and did good work by so doing, gave more convincing proofs than before, that no organization for the service of communications would be complete, which did not provide during peace a distinct and trained department, to undertake the entire management and control of the railways. To this end at the close of the war, the Minister of War in concert with the Chief of the Staff organized the "Railway Battalion," in which the necessary training might be acquired, and by which without altering any of the principles of the existing military organization of Prussia, a large *personnel* might within a limited time be obtained, subject in war to the Chief of the Army Staff.¹

The obligatory service exacted from all Prussians, made the realization of any railway scheme an easy matter, as far as mere numbers were concerned. A stroke of the pen could at any time provide a fixed annual contingent; and the peculiar military system allowed of these men being passed rapidly through the ranks into the reserve, ready to be called together at any moment. The objects therefore to be furthered by the creation of a Railway Battalion were little hampered by other considerations in organizing its peace footing. It should doubtless be the nucleus of all necessary railway formations for war; the technical training in peace should be such as to enable its staff to construct any works requisite; to repair without loss of time any that had been destroyed, and to undertake the entire traffic along railway lines of communication; it should in peace procure, prepare, and preserve all plant and materials required in railway work, and be capable of supplying with tools the detachments which would be organized in war.

It was determined that the railway sections of 1870-71, should form the basis upon which the battalion should be raised. The non-commissioned officers and men whose time of service under the colours was not completed were enrolled, and such plant as had been collected

¹ The necessity of having a military body, educated *during peace* to the technicalities of railways, was recognized from the events of the late war by our own Government as well as by the Prussians, for on February 2nd, 1871, the Inspector-General of Fortifications called for a detail of officers, non-commissioned officers, and men, with tools and plant for a detachment of Royal Engineers, to be attached to a division of 10,000 infantry, for the purpose of repairing and maintaining the railway communications. It is a matter for regret that the report of the Committee to whom it was referred has not been made public; but the correctness of the views they embodied in it, has been established by the success of the Prussian organization which was subsequently published.

for their use during the war and such as had been taken from the French and retained by the Peace of Versailles, was appropriated to the battalion, and stored in its dépôt in Berlin. A royal order of May 19th, 1871, decreed its constitution. The Major in command and the Adjutant were appointed in June, and the rest of the officers during the following months. On October 1st, a force amounting to 330 rank and file took up its quarters in barracks assigned to the battalion in Berlin. The officers were drawn from the Engineers; 60 non-commissioned officers and men were enrolled from the demobilized railway sections; 234 from the Pioneers, infantry, and re-engaged men of other arms still serving; and a contingent of 36 recruits and three-year volunteers. All were of a trade useful in railway work, smiths, carpenters, miners, quarrymen, and the like.

The Inspector-General of the Engineer Corps was given the superintendence of the discipline and economy, the Chief of the Staff the technical training of the Railway Battalion—a disposition which has given every satisfaction. A knowledge of all European railways, and acquaintance with the resources in rolling stock of all the lines in the Empire, whether State or private, is at once the duty of all officers of such a branch as a railway battalion, as well as of the Staff of the army. To control and direct the technical work of a body in constant intercourse with the various lines of the Empire, was wisely entrusted to the General Staff, and could not fail to be to the advantage of both. The relation which naturally sprang up between the officers of the Battalion and the Staff, has given rise to the sentiment sometimes expressed by their fellow officers of the Pioneers, “the officers of the Railway Battalion obtain everything they want through “the Staff.” It was found that it was only by constant intercourse with the officers of the Staff, and with the railway and telegraph employés of the various railways, that the officers of the battalion could be trained, and keep themselves informed of the progress of State and private lines in course of construction, of the amount of rolling stock in use, of the telegraph lines last established, and of the value of instruments and tools lately invented. The officers of the battalion were thus enabled to express their ideas to the Staff, benefitting them by the experience they gained daily, and having an opportunity themselves to study the special work of the Staff. A relation between the two of such a nature was held to be necessary to prevent friction between any of the departments—employers and employed—charged with such various work in war as the rapid transport of troops; with maintaining supplies of all kinds; with perfecting projects for establishing a second line of way along the most crowded lines, and with constructing new ones. In peace the railway department of the Staff were also charged with training officers to the knowledge of railway service, directing the transport of troops out for manœuvres, and of the various “classes” when called out for drill and returning home; preparing every detail for transport in war; collecting statistics about foreign railways; examining, from a military point of view the proposed construction of any lines; and finally studying all subjects for the advancement of the military railway service. In these

matters the officers of the battalion were frequently consulted, and the result has been that this branch of the army is popular.

The peace-footing organization of the first battalion has been followed in the recent augmentation into a regiment.

It was composed of a staff, 4 companies, and a dépôt:—

STAFF.	{ 1 Field-Officer (Colonel or Major) Battalion Commander. 1 Second-Lieutenant, Adjutant. 1 Surgeon and 1 Assistant-Surgeon. 1 Paymaster and 1 Aspirant-Paymaster. ¹ 1 Sergeant-Major, Quartermaster. 2 Non-commissioned Officers, a draughtsman and clerk. 1 Drum-Major. 1 Armourer.
EACH COMPANY.	{ 4 Officers (1 Captain, 1 First-Lieutenant, 2 Second-Lieutenants.) 18 Sergeants and Non-commissioned Officers (1 Sergeant-Major, 4 Sergeants, 12 Under-officers). 2 Buglers. 3 Tradesmen. 1 Hospital-Assistant. 100 Lance-Corporals and men.
DEPÔT.	{ 1 Captain and 1 Sergeant, in charge of a large and valuable store of war material.

Upon mobilization each company is augmented into two CONSTRUCTION COMPANIES and one TRAFFIC COMPANY, making an establishment, on a war footing, of four traffic companies and eight construction companies. Also a RESERVE DIVISION, consisting of a Staff, two companies and a section of tradesmen. Each of the construction companies has a train of five waggons for the transport of tools and material.

It is evident from what has just been said, that on the declaration of war the system on which the men have been trained is abandoned. The peace companies of the battalion give place to mobilized companies of a different organization each complete in itself, independent and acting upon its own responsibility; the whole directed by one head, but under officers whom most of the men do not know, and non-commissioned officers ignorant of the temper, individuality, or abilities of those with whom they have to deal.

Why is such a course adopted? The answer lies partly in the military system of Prussia. The whole army is under the same disadvantage. The service for all is three years under the colours, four in the Reserve, and five in the Landwehr, and the military system has been developed by the national character. Further reasons which determined the constitution of a railway battalion during peace, and not independent companies attached to corps d'armée, may be

¹ Awaiting commission.

² Superior rank to our Corporal.

traced to the facility afforded by such a system to recruiting, and more especially to a fact already alluded to. The lesson of the last war showed the original idea to be untenable, that it was possible to place one line of railway at the disposal of each army, to be worked by the railway companies belonging to the several corps d'armée composing it. Centralization of the authority over the whole was proved to be indispensable. Isolated sections experience showed, could not be detached from their army corps to perform extraordinary work requiring a more powerful *personnel*, without danger. Moreover a battalion could be supplied with a valuable stock of plant and material, which it would not be advantageous to entrust to independent companies. In short the following were the grounds for constituting a railway battalion: it enabled a large and valuable stock of plant to be collected in the *depôt* in Berlin; officers and men could be rapidly passed through its ranks into the *Beurlaubtenstand*¹, where they would be available at any moment and yet without cost to the State; it ensured similarity of procedure, and uniformity in material; and lastly, it was in itself a school of instruction for the future.

The men were given the same equipment as the Pioneers of the Guard, and an uniform only differing by having the distinguishing letter E (*Eisenbahn*) in yellow, instead of the number of the regiment. They were armed like the Pioneers, at first with the '68 pattern of the needle gun, subsequently altered in 1875 to an improved form of chassépôt suited to metal cartridges, and they now have a special form of the Mauser rifle similar to that known as the *Pioneer rifle*.

In addition to the military training which the battalion received to enable it to become part of and manœuvre with the Guard corps, in the same way as the Pioneer Battalion with its corps, a regular scheme for its technical training was laid down. It provided for the theoretical instruction and practical education necessary in laying down, repairing, or destroying all works belonging to a system of iron way, including a scientific teaching in all branches of the art of construction, and a knowledge of law so far as it affects railway matters.

The rolling stock appropriated to the battalion consisted of two locomotives, two carriages, two guards' vans with baggage compartments, and two trucks. With these it was practised in rapid embarkation and disembarkation of men and material; as well as engine-driving, stoking, taking to pieces and cleaning the machinery employed. In case of service away from a railway, each company on peace footing had the following waggons which, except the office waggons, are similar to those of the bridge equipment, and of the same pattern as those of the rest of the army. They were built by a firm, Dittman, in Berlin, who contracted for it in July, 1872, and may be found in detail in the official "*Zeichnungen der Fahrzeuge der Brückentrains*, Berlin, 1874." They are four general service waggons with four horses for tools; two with four horses for the transport of prepared girders and timber ready to be fitted together; two for baggage, with two horses; two office waggons for repairing and

¹ The *Beurlaubtenstand* comprises all who have already served and have passed into the Reserve and Landwehr.

working the telegraph. The Battalion Commander had, in addition, a baggage waggon. These forty-one waggons formed the transport train with which the battalion practised loading and unloading in its Spring route-marches.

In addition, each company in its annual manœuvres or upon taking the field, had the power of requisitioning private boards for a train of twenty-one carriages for the transport of the men and material complete, retaining it till the close of operations.

The tools for the complete equipment of the eight construction companies were in temporary stores in Berlin until the end of 1875, when a large building with eight magazines, one for each company, was erected in connection with the new barracks for the regiment at Schoenefeld. An officer (a captain of the Battalion) and a sergeant were placed in charge and lived at the dépôt, superintending the issue and storage of all tools, &c.; horses alone were wanting to complete the field establishment. The requisite horse-cloths, harness, whips, hatchets, bill-hooks, lanterns, oat-measures, forage and strappings complete, were kept in the company stores. Upon mobilization the ten waggons are distributed between the two construction companies, into which each company on peace footing is formed. These five will only carry half the materials of the company; but as in practice the restoration of a line destroyed by the enemy is begun from both ends, the other half is left in the special train which has brought it.

The estimate for rolling stock, waggons, and tools for the Railway Battalion in 1872, was £15,285, and was largely exceeded. The total expense of organizing the Military Railway Service, including the purchase of land for a station and practice ground and the cost of building a barrack, amounted to £140,880.¹ The tools and rolling stock purchased in 1872, and added to those of the demobilized railway sections, completed the battalion establishment of plant and material.

Immediately after the Railway Battalion was definitely constituted, all officers who had served during the war and who were on the railway staff in civil life, were enrolled as part of the reserve of the Battalion, whatever arm of the service they might have belonged to when with the colours. The effective officers of the Battalion were at first recruited from the Infantry and Engineers alike, and it was hoped that in future the majority could be drawn from the former. Experience soon showed that a greater technical knowledge was required than Infantry Officers could as a rule acquire in the time allotted, unless they were previously acquainted with the subjects of study; and it was found necessary to call annually for volunteers from among the Engineers, previous to their entering the practical school for Artillery and Engineer Officers.

From this school they generally entered the Battalion as second-Lieutenants, and remained with it at least three years, in order to learn successively the different branches of construction, working, destruction and rapid repair. Under the senior officers of the Battalion they studied "Technical Railway Management," as given

¹ These figures are taken from the report of a Swiss officer to his Government.

by *Heusinger von Waldegg*, in "Technische Dienst Instruction für das "Königliche Preussische Eisenbahn Bataillon;" "Telegraph and "Signals," by *Baron von Weber*; "Machinery Instruction," by *Paulus*; "Report upon the Employment of Railways during the American War." Mathematics and drawing also formed part of the course. The above works supplemented by verbal instruction in rapid repair and destruction of railway works, mining, and destruction of tunnels, formed the theoretical course. The application of it to practice began in April, and lasted till October of each year, either upon the practice ground of the Battalion at Schöneberg, or when attached with men to railways belonging to the State. No one was permitted to make a speciality of any branch, by which arrangement all were trained so as to act in any capacity. Though officered in this way by Engineers, the Battalion was always independent of the Engineer Corps, and received officers of other arms if over two years' service and duly qualified; they served for the first year on probation.

The Battalion was kept up to a strength of about 500 men, and received annually about 160 recruits, furnished in certain proportions by each district. The non-commissioned officers were principally from three-year volunteers employed previously on railways. The annual contingent was drawn from railway employés, or such trades as are employed in railway work, carpenters, smiths, quarrymen, and the like. Only Locomotive Superintendents and Engineers of the permanent way were admitted as one-year volunteers, and after their year of service were passed into the reserve of the Battalion, if they did not wish to obtain their commissions. A number varying yearly, but always considerable, availed themselves of this privilege, by which their military service was turned to profit in their civil profession. The plan was economical to Government. It was a good plan because it proved successful, and any inconvenience was easily remedied by increasing or diminishing the contingent. In order to train a large number of men, it was commonly the practice to allow even three-year volunteers to return to their profession after two years with the colours, rejoining whenever required.

The organization and armament of the Railway Battalion being similar to that of the Pioneers, the recruits were put through the same training. It received the annual contingent in the beginning of November, the three-year volunteers on the first of October, and one-year volunteers in the middle of the same month. A certain number of recruits were selected at the outset and joined the three-year volunteers, with a view to being trained as under-officers; by which plan that much vexed question of the supply of under-officers in the German army was considerably relieved for the Battalion. Military exercises and the theory of war formed the recruits' first course of instruction. They passed successively through the regular drill of an individual soldier, through that of a company, and that of a battalion; two months to each of the two former, and one to the latter, without leave of any kind. For one hour each day of this period they received a lecture on military subjects. During the training of the recruits, the remainder of the Battalion was employed

in the workshops as mechanics, carpenters, smiths, &c., repairing tools, improving or altering the rolling stock. In each company, under-officers who had been previously trained by the officers, gave technical instruction in the machines and telegraph instruments; musketry practice completed the winter course. Practical work began in April upon the practice ground at Schöneberg; picketting out and completing a formation level, curves, changes of slope; destruction and repair of lines by various methods; permanent and temporary stations; construction and leading into stations of telegraph lines; establishment, charge, and boring of mine shafts; and details of bridges and tunnels. Particular attention was paid to the hasty construction and repair of bridges, both by means of material collected on the spot and by such as was carried by the Battalion in its column of transport ready made up and easily put together. During the summer each company sent four or five non-commissioned officers to be attached to private railways boards, to learn the duties of station-master, train-conductor, engine-driver, telegrapher and engineer of a telegraph line; and every year in turn three-fourths of the men of the Battalion under their own officers, were detached to construct lines strategically important, or advantageous to the public. Continual applications were made for the services of the men to repair accidents to the lines, and damages from storms and floods, all of which were readily acceded to by the officer in command, and promptly carried out. When employed on this work for private railways, the boards paid the men extra working pay amounting to about 1s. 6d. a-day; the officers reserved their independence, and accepted no emolument. The ordinary pay of the officers and men was the same as for the rest of the army. By the summer of 1875 a sufficient number of men had been trained for the duties of the subordinate staff, superintendents, stokers, &c., and the practice of detaching non-commissioned officers to learn these duties was given up. During summer there was a weekly parade for drills, and the Battalion was required to be present at reviews and garrison parades. It furnished its own guard. It would be impossible in even a sketch of the practical instruction given, to omit entire mention of what disposition was made of time.

An ordinary day was much as follows:—

5 a.m., Réveillé; 6 a.m., Breakfast (coffee); 6.30 a.m., a general parade in two ranks, and roll called by the orderly non-commissioned officer of the day. Orders for the day's work and such as the Captain in command issued were read out, and the officers then inspected and detailed the working parties. The same men always worked together, and only the non-commissioned officers in charge were occasionally changed; each party performed the same work constantly, and was therefore perfected in only one branch, but the rapidity was increased. The tools were in charge of the men who used them, and were not returned into store daily; the non-commissioned officer of each party checked them after work, and all repairs were done by a workman at the general depôt, close to the barracks. At work, the men wore working frocks and trousers of white serge.

Work continued from 7 to noon, with a quarter of an hour's rest at 10 o'clock; from 12 to 1 they broke off for their mid-day meal of bread and sausage, or bacon, brought from barracks, and which they eat where they had been working. Work was resumed at 1, and at 4 p.m. they returned to barracks; at 5 o'clock they had their principal meal, after which till tattoo the men were at liberty. Four days in the week they worked eight full hours; Wednesday and Saturday only six hours. On Sundays there was generally an inspection parade at noon, dinner at 1, and the men were then free to go where they liked within certain bounds.

Rapid destruction of the permanent way was practised on the manoeuvring ground of the battalion at Schöneberg, both by taking to pieces and removing rails and sleepers, and by blowing up the joints of the rails with cartridges of dynamite. This latter method has been almost entirely handed over to the Cavalry, who use one pound cartridges.

The practical work done by the Battalion for instruction, was small in comparison with that done since the time of its formation in 1871 in the interests of private railway boards, in repairing the damage from inundations and accidents. Between the time of its constitution and the end of 1872 it had no practice ground of its own, and was employed altogether in this way, by which at the outset it established its public utility, raised a feeling of confidence between itself and the civil engineers with whom it was employed, and paved the way to that good understanding which now exists with the various railway boards. In the first year of its existence, 1872, the battalion constructed 100 miles of permanent way, two termini with their points and crossings, one roadside station, enlarged four termini, restored two dykes destroyed by inundations, and a railway bridge at Rykgraben near Greifswald.

In 1873, 4 officers, 9 non-commissioned officers, and 76 men changed the iron-way of the line from Altkirch to Dammerkirch, from double-headed to Vignole rails, with the points and crossings in the termini, in three months. In Silesia, one company, in the same time, constructed 15 miles of permanent way, five iron bridges, and ten points, on the line from Kamenz to Frankenstein. Another detachment in Thuringia, 16 miles of way, a temporary bridge of 16 feet span, and the necessary signals for the whole portion.

A detachment of 120 men enlarged the terminus of the Eastern Railway at Berlin, adding sidings and sheds. A detachment was further employed towards the end of the year in removing granite rock by blasting with dynamite, for the Gœrlitz-Reichenberg Railway. Very valuable observations were made during the course of this work.

In 1874 the Battalion made the tunnel under the Circular railway round Berlin, where it passes over the Battalion's practice ground. It was complicated by the necessity of not interfering with the overhead traffic. It is now used by the Berlin-Dresden Railway, as well as by the Battalion for its line to Zossen.

On the Berlin-Dresden line a detachment of carpenters and miners of the Battalion were employed in changing two level-crossings, so as

to carry the lines over the roads. The roads were sunk 9 feet 10 inches, and the lines raised on a wooden bridge 650 yards long. Civil labour was called in to assist them in this, and the work continued night and day without interruption to the traffic, and without any accident.

In 1875 a luggage train off the line, on the Berlin-Dresden Railway was replaced, and the way repaired by 2 officers and 90 men. The traffic was resumed after twenty-one hours' work.

On December 9th, 4 non-commissioned officers and 14 men were despatched at the earnest request of the Berlin-Magdebourg Railway, to relieve their own staff, tired by their exertions to meet the traffic after a short suspension from snow.

But the principal work of the Battalion this year was the construction of the line from Berlin to the artillery practice ground at Zossen. It was undertaken to afford the Battalion a ready means of instruction in the technical working of a railway, the whole administration being left in its own hands. Its total length is 30 miles, and it has three stations. It was commenced in the first week of April by nearly the whole of the Battalion, which had left Berlin in three detachments on March 31st, and had been cantoned near Zossen, Blankenfeld, and Mariendorf. These returned on May 19th, and were replaced by the 3rd company, consisting of 3 officers, 10 non-commissioned officers, and 90 men, who completed it in the first week in July. It was opened in the middle of the month, and the direction of it given to the Battalion commander, with a staff of 1 Captain¹ as Traffic Manager, 1 Lieutenant as Secretary, and 1 Lieutenant as Locomotive Superintendent. The whole management of the line was entrusted to the Battalion. An augmentation of its numbers had been contemplated before, and being necessary for this purpose, was approved by the Emperor in August. By the middle of September a second battalion, organized on the same footing as the first, was being rapidly pushed on with, as well as the barracks, buildings, and stores for it at Schönefeld; and till these should be completed, quarters were prepared at Tempelhof and Schöneberg.

The Budget of 1876 for Military Service, provided for a RAILWAY REGIMENT of two battalions, and declared its creation necessary, both to provide the requisite staff for the numerous lines, which would have to be worked in war, and to give instruction in railway work to a large number of the Beurlaubtenstand. This latter point is readily understood when we remember that Prussia was at this time contemplating handing over all its railways to the Empire. The Budget provided for the following addition to the peace footing; 3 Field Officers, of whom 1 was to command the regiment, 1 the new battalion, and 1 to be Supernumerary, effective, but without special command; 2 Captains of the first class, 1 Captain of the second, 4 first and 14 second-Lieutenants; total 24 Officers. 2 Surgeons, 1 Paymaster, 1 Armourer, 4 Sergeant-Majors, 4 Vice-Sergeant-Majors, 16 Sergeants, 53 Under-Officers, 48 Lance-Corporals, 353 men, 12 tradesmen, 2 Aspirant-Paymasters, and 4 Hospital-Assistants; total 500.

¹ By royal order of 8th February, 1876, a staff officer.

This augmentation allowed of a second battalion being formed, with the same effective as the first, except for the addition of another second-Lieutenant to each company, and of one to the staff, of the second battalion.

It was completed by March 1st, 1876.

The peace footing organization of the Railway Regiment is therefore, a staff, eight companies, and a dépôt, and consists of:—

- 4 Field-Officers, of whom 1 commands the Regiment, 2 the Battalions, and 1 is without special command.
- 8 Captains, 8 First-Lieutenants, 27 Second-Lieutenants.
- 2 Surgeons and 2 Assistant-Surgeons.
- 3 Paymasters and 3 Aspirant-Paymasters.
- 2 Armourers, 1 Drum-Major, 9 Drummers and Fifers, 8 Hospital-Assistants, 24 Tradesmen.
- 9 Sergeant-Majors, 8 Vice-Sergeant-Majors.
- 32 Sergeants, 103 Under-Officers.
- 98 Lance-Corporals, and 700 men.

On a war footing, each company is augmented into two construction and one traffic company, and the instructions of July 20th, 1872, on the Service of communications, then regulate the railway organization. A General or Field Officer is placed in charge of the railway-service in the field, with the title of Chief of the Field Railways, under the orders of the Inspector-General, who has general superintendence of the entire route-service. He arranges for the transport of stores, reserves, &c., and for the concentration of the several Army Corps, he organizes the railway service at the seat of War, and makes new sidings and works if required.

Attached to him for duty are:—

The Officer commanding the Prussian Railway Regiment.

Two officers of the general Staff, two superior railway officials and four clerks.

Within certain limits fixed by the regulations, the Chief can dispose of the rolling stock on all home lines, and those on occupied territory, exercising this power through—

1. Military railway directors, for railways within the theatre of operations. This limit is fixed, in every case, by the Emperor, and is considered to extend 80 miles from the front.
2. The railway division of the General Staff at home, to regulate all military transport over lines not within the theatre of operations, and which are worked by their own officials.
3. Railway Line Commandants, in charge of certain home-lines and systems, and the military transport over them.
4. Railway Station Commandants, who are under the orders of a Military Railway Director (1), or of a Railway Line Commandant (3), according to the position of their station.

The Prussian Railway Regiment (sixteen construction and eight traffic companies), is at the disposal of the Chief of the Field Railways, for employment in repairing existing lines or in constructing new ones, and also in working them. For this purpose each traffic company is

organized to work a section of line of 28 to 37 miles, with an effective of:—

6 Officers (1 Captain Commanding, 1 First-Lieutenant, 4 Second-Lieutenants as Station Superintendents).

41 SERGEANTS AND UNDER-OFFICERS.	{	1 Company-Sergeant-Major.
		4 Station Masters.
		1 Booking clerk.
		12 Engine-drivers, 7 train-conductors, 7 baggage-masters (guards).
		3 Permanent-way overseers.
20 LANCE-CORPORALS.	{	6 Telegraphers.
		3 Guards.
		1 Telegraph foreman.
		2 Gangers of platelayers.
		2 Stationary-engine-drivers and 12 stokers.
139 MEN.	{	4 Makers-up of trains, 18 pointsmen.
		14 Platelayers, 7 workshop artificers.
		4 Carriage greasers, 2 engine cleaners.
		55 Watchmen and gatemen.
		35 Breaksmen.

There are sixteen construction companies, each with an effective of:—

9 Officers, 1 Captain (Chief Engineer), 2 First-Lieutenants,
4 Second-Lieutenants (engineers of the permanent way),
1 locomotive engineer, 1 telegraph engineer.

1 Surgeon, 1 Paymaster.

25 Non-commissioned Officers.

176 men, including 2 buglers.

11 men of the train and 11 horses.

Each is accompanied by its column of transport-waggons.

1 Under Officer in command.

9 Men of the train, 18 horses, and 5 waggons.

The construction and traffic companies are distributed as required, among the Railway Directors and the Railway Line Commandants. They can be increased from their dépôts if necessary; for which purpose a reserve division for each battalion on peace footing is formed. Its effective is:—

STAFF. { 1 Officer, 1 Surgeon.
 { 1 Paymaster, 1 Armourer.

TWO COMPANIES, { 6 Officers.
EACH WITH { 25 Non-commissioned Officers, 2 Buglers,
 { 1 Hospital assistant.
 { 176 men and 2 horses.

A SECTION OF TRADESMEN, { 1 Officer.
TAILORS, SHOEMAKERS, { 6 Non-commissioned Officers.
SADDLERS, &c. { 100 men.

All orders referring to the Railway Regiment and its work, are given through the Officer commanding it.

For every 280 miles of way used, a Military Railway Director is appointed. He is a Field Officer (Colonel), and his principal duty is to organize the train-service over lines on occupied territory, and over such home-lines within the theatre of war, as are prevented, through the war from carrying on the service unassisted by the military authorities. He regulates both the transport arrangements, and the technical working and management of the lines under his charge.

He is assisted by a staff of:—

1 Field-Officer in charge of the Transport Department.

4 Officers to superintend the Traffic Department.

The Field-Officer carries out his orders for the transport-service, through 1 Captain as Adjutant, 1 Staff-Surgeon, 1 Field-Paymaster, and 1 Officer of the Intendance.

The traffic department contains a manager's office, an engineer's office, an accountant's chest and office, and a telegraph inspector's office; the establishment for these is detailed in the "*Révue Militaire de l'Etranger*," of November 26th, 1872, to which the writer would refer all interested in the subject, as one of the most valuable translations from the German that has appeared in that valuable journal.

To work the line, to repair, restore, or enlarge where necessary, a military traffic inspection and from two to four companies of the Railway Regiment are appointed to every 70 to 140 miles. A traffic inspection consists of 1 Captain, 5 officers, 14 non-commissioned officers, and 8 train soldiers.

The regulations laid down for the Prussian Railway Regiment govern the working of the lines.

It would be but a mere quotation from the Regulations of July 1872 on the German Route Service, to proceed with the functions and powers of the remainder of the departments under the Chief of the Field Railways, all of which may be read in the number of the "*Révue*" referred to above.

But the following extracts are compiled as the number may be out of print, or not easily obtainable.

Field officers are trained as railway line commandants during peace, and upon mobilization are appointed to districts. With the railway officials they arrange for the concentration of the army, borrowing rolling stock, drawing up time tables, and providing refreshments at stations determined upon. The conveyance of sick and wounded as they arrive at the hospitals of the district, is also regulated by them.

Railway station commandants enforce strict adherence to the time-tables, and arrange the police and military duties about the stations. They are informed as to what trains will run through, stop, or be unloaded at their stations; by which they will be enabled to provide for the wants of troops, horses and cattle. Certain arrangements are necessary at all stations, such as latrines, fixed platforms, and moveable ramps; a ward for sick unable to continue their journey, buckets for watering cattle, and cups or other vessels for men. The proper supply of refreshments is also regulated by them. All finance and accounts of the mobilized military-railway bodies alluded to are settled

by the field paymaster on the staff of the railway-district, with the exception of those of the field-railway companies. They keep their accounts separately and have separate pay-chests. The finance of those not mobilized is managed by paymasters belonging to their staff.

To provide the large number necessary to carry out the regulations, so far as they affect railways, very early steps were taken. An order of the Minister of War declared that after the 1st October, 1872, all employés of railways, whether belonging to the State or private boards, and who formed part either of the Reserve or Landwehr, should be enrolled in the Reserve and Landwehr of the Railway Battalion, whatever branch of the service they served in when under the colours. But it specified that this order only referred to those who had a special knowledge of the construction and working of lines, and not to porters and the like. All men of the Reserve and Landwehr are enrolled upon "Stammliste," under that branch of the service in which they served; and by the order in question, it was decided that the men affected should be borne on these lists as belonging to the railway branch; but should be able to have their names transferred to their former place in the lists, if they left the service of the boards and desired it. Officers as well as men were included in this order. Also since the constitution of the Battalion, the men upon quitting it have been enrolled on separate lists among the troops of the Landwehr; the officers according to seniority, upon two lists, those of the Reserve and of the Landwehr. The Railway Regiment now keeps a similar list corrected monthly from reports sent to them by the commanders of Landwehr in the various districts; and every year on May 15th, when the annual state is forwarded to the King, the regiment appends to the effective list of officers, that of the officers of the Reserve and Landwehr who have passed through it. The lists kept in each district of Landwehr contain the service, age, residence, and civil employment of every man and officer, and from this is determined their liability to, or exemption from, service upon mobilization. Twice a-year the district commanders of Landwehr furnish the regiment with a list of men employed on the staff of any railway who have not passed through the regiment. The employés of a line who thus become part of the Reserve and Landwehr of the regiment, include the staff for administration and issue of tickets, for working the rolling-stock, in charge of the way and stations, and workmen of various trades; the higher grades are, inspectors of traffic, of works of construction and of telegraphs, architects, foremen of works, railway engineers, locomotive engineers, foremen of machinery and workshops, overseers and comptrollers of the way, traffic superintendents, and assistant-superintendents of stations. The above, and very much more, forms the subject of the Landwehr Ordnung, and the Control Ordnung deals with the question of liability to and freedom from service amongst the employés. One extract will be given here, "All immunity from service ends, when the last class of Landwehr is "called out." The lists are of the greatest importance to the railway boards, who are by their means in no danger of being deprived upon

mobilization, of all the officials working the lines, and they exemplify the unity of interests existing between the army and the State. Exemptions of officers and men are readily and easily made, without having, as would otherwise be the case, to pass from the district commanders of each Landwehr battalion, through those of the corps d'armée, for the decision of the Chief of the Staff, as commander of the Railway Regiment. As a further means of increasing the number of railway employés in the Beurlaubtenstand, inducements were always offered to officers, after their term of service, to accept positions on railway boards, and to men, appointments on the staff of the State lines. Only lately, the difficulty of getting under-officers to remain under the colours for a greater number of years, has obliged the German War Office to hold out to them the certainty of appointment in State railways after a definite number of years.

In the Army List of 1873, the First and Second-Lieutenants classed in the Reserve and Landwehr of the Battalion amounted to 43 and 118 respectively. In 1874 these figures had risen to 56 and 121. And in that of November 12th, 1875, we find in the Reserve, 1 First and 72 Second-Lieutenants; in the Landwehr, 8 Captains, 37 First, and 179 Second-Lieutenants, or a total of 297 officers.

The Army List of that date also gives the effective officers of the Battalion, (those of the second battalion had not been appointed,) as 1 Colonel commanding, 5 Captains, 5 First-Lieutenants, and 4 Second-Lieutenants.

Officers attached for Service: 2 Majors of the Engineer Corps, 4 Captains, 2 First, and 5 Second-Lieutenants attached from Line regiments.

Administration of the plant in store: 1 Captain.

Total, 1 Colonel, 2 Majors, 10 Captains, 7 First and 9 Second-Lieutenants.

In case of mobilization, therefore, Prussia has 1 Colonel, 2 Majors, 18 Captains, 45 First and 260 Second-Lieutenants, total, 326 officers, for the various requirements of railway transport. Each battalion on a war footing is, as we have seen, augmented into eight construction companies, and four traffic companies, with a reserve division of two companies and one section of tradesmen. These require 112 officers, so that there is a greater number than necessary for two such battalions. As for men, the system pursued of receiving a large number of one-year volunteers who brought with them a previous knowledge of railway matters, and who therefore could be passed rapidly into the Reserve; of extending the privilege so far to the others, as to allow them to leave the colours after two years; and of incorporating in the reserve of the regiment all employés of the railways, has more than met the requirements of the case. By the law of June 13th, 1873, upon the allegiance of public departments in case of war, the boards of railways are obliged to be prepared to convert trucks into carriages for horses and men, to provide for the transport of troops and supplies, and to furnish rolling-stock of every kind, as well as the necessary staff for repairing and

working the lines.¹ There is little or no difficulty, therefore, in raising the 6,000 men required for the service-establishment of the railway companies from railway officials, engineers and artificers liable to render military service, as well as from suitable men in the Reserve; and this without depriving the boards of the staff required to work the home portions of their lines; their services are called for by the Chief of the Field Railways as necessity arises, and the exigencies of the home railway service permit. If any are still available after the concentration of the army is effected, and the formation of the railway corps completed, the regulations upon the Route Service lay down that with the consent of the Chief of the General Staff, they may be incorporated with other dépôt troops by the Minister of War, or they may be used to furnish guards and construct field-works for the protection of the lines, or to fill up the dépôt of the Railway Regiment. In addition to the departments mentioned above, officials of the Government lines, not liable to military service, may be called upon for railway service in the field, by the authority of the Imperial Chancellor. Civilians may also be engaged for the same service by authority of the Chief of the Field Railways. The two classes last mentioned are attached to the railway companies as military officials.

A military organization carefully prepared during peace can alone develop the qualities required of such men, in the course of a war which may be protracted, and is sure to be subject to diversities of fortune; and General MacCallum, in his report to the United States Congress after the campaign of 1861-65, was most emphatic in his assertion that the experience and practice in the first two years as director of Railways, alone enabled him to undertake with any chance of success the enormous task imposed upon him. Convinced that to wait till war is declared to complete the smallest link in the chain, is to expose the whole to failure, the railway department of the Prussian Staff have taken active measures to prepare the principal stations along important strategic lines, so as to permit of troops being readily disembarked and sheltered and provided for; to establish permanent stores of provisions in the principal termini, and to train "Line commandants" to their duties during peace. They have also built "interrupting forts" (Sperr Forts) at intervals along important lines, to prevent the turning of a single fortress along a railway being sufficient to put the whole of the rest of the line in the enemy's power; Metz affords an example of this in the late war.

The most important work undertaken to provide instruction to the Regiment is undoubtedly the construction, maintenance, and working of the military line from Berlin through the wood of Kummersdorf to Zossen, the administration of which is entirely left in its hands. A translation of the statute organizing it in 1875, is given *in extenso*, both because of its value as based upon the joint reports of the Minister of War and the Minister of Commerce, Industry, and

¹ The tariff for transport and the use of stock is settled by the central committee, composed of delegates from the Federal States, but no indemnity is paid for the conversion of the trucks

Public Works, and because of its instructiveness as the first publication of the kind relating to a military railway body.

"The following statute organizing the Government line from Berlin to the practice ground, based upon your joint reports, bearing date 31st July of this year, has been approved by me, and is forwarded to you to be carried out.

(Signed)

"WILLIAM.

(Countersigned)

"VON KAMEKE.

"To the Minister of War and the Minister of Commerce, Industry, and Public Works."

1st Article. Administrative Authorities.

The military line from Berlin to the practice ground is under the superintendence of the Royal Military Railway Department; it is controlled, on the one hand, by the War Office and the Chief of the Army Staff, and on the other, by the department charged with the supervision of Railways.

2nd Article. Managers.

The body of Managers comprises a Captain¹ and two Lieutenants of the Railway Battalion, in the capacity of General Manager, Secretary, and Locomotive Superintendent.

3rd Article. Executive Staff.

The "Military Railway Traffic Department" will carry on the traffic, the maintenance of works, and the administration of the line, under the General Manager. The Senior Captain of the Railway Battalion will be appointed Manager of the Traffic Department, with the following Staff as permanent members:—

- 1st. A Lieutenant in charge of the head office;
- 2nd. A Lieutenant, Locomotive Superintendent;
- 3rd. The officer in charge of the Battalion's *depôt*, who will superintend the traffic at the *depôt* of the military line, and the plant in the workshops;
- 4th. A Paymaster at the head of the pay office;
- 5th. Subordinate Staff—Clerks, draughtsmen, store-keepers, foremen of works.

Temporarily attached to the Traffic Department are a certain number of officers, non-commissioned officers, and men of the Battalion to work the line, and be instructed in the management of the traffic.

4th Article. Duties of the General Manager.

The General Manager will see that the administration and working of the line conform to the laws relating to them, and to the special directions issued by the authorities named in Article 1. He has full power to issue and enforce such orders, instructions, and bye-laws as relate to his department as he may think fit. He is charged with the correspondence of the managing body, and refers all questions which require the decision of the higher authorities; he represents the managing body (except in the case treated in Article 6); he gives

¹ By royal order of February 8th, 1876, a *staff officer*; and for *battalion read regiment* throughout.

judgment in the litigation of the line, and sanctions all contracts, except those specially reserved to other authorities. In carrying on the traffic of the line, he is never to lose sight of the main object for which it was intended, namely, to afford the means of instruction in the technical management of a railway to officers, non-commissioned officers, and men of the Railway Battalion. Everything is to be subordinate to the furthering of this end.

5th Article. Nomination of the Staff to carry on the traffic.

The Manager, the Officer in charge of the head office, and the Locomotive Superintendent of the Traffic Department, will take up their duties as part of the Executive Staff, upon nomination by the Chief of the Army Staff, as recommended by the Commander of the Battalion. This latter will appoint the subordinate staff of this department, the company to work the line (complete in itself, or combined with men from others), and the employés to superintend and be instructed in engine-driving, relieving them from time to time.

6th Article. Duties of the Manager of the Traffic Department.

The Traffic Manager will direct the work of the department, according to the orders and instructions issued by the General Manager, whose place he will fill in emergencies. He sees that all matters connected with the traffic and administration of the line are promptly carried out, directs the correspondence of the department, and has the use of a stamp, "Traffic Department of the Military Line "from Berlin to the Practice Ground." He is especially responsible for the maintenance, regularity, punctuality, and economy of the traffic, as well as for the discipline which should exist throughout the whole. All offences not committed when doing the duty of the railway, or in connection with it, are to be treated as regimental offences, and dealt with according to Article 1 of the Army Regulations of October 31st, 1872, by him or by one of his immediate superiors in the administration. The Traffic Manager has the disciplinary powers of an officer¹ commanding a detached company. When he is unavoidably absent, from illness or on leave, the Commander of the Battalion will appoint another officer to do his duty.

7th Article. Superintendence of the traffic.

The duties of the Company Officers detached according to Article 5, irrespective of those of the Company, will be regulated by Article 8 for the superintendence of the traffic.

8th Article. The details of the service and employment of the Traffic Department, as well as the special duties to be performed by the Manager, and by the non-commissioned officers and men of the Military Railway, will be given subsequently in *Regulations for the Service*.

9th Article. Administration of the Dépôt.

The Officer in charge of the unused rolling stock and plant, and of the workshops, will also purchase, store, and issue all plant, tools, and other material in his charge, and will keep the ledgers and account books. Special instructions are issued for his guidance in "Instructions

¹ By royal order of February 8th, of a detached staff officer.

"for the Administration of the unused Plant of the Military Railway "from Berlin to the Practice Ground."

10th Article. Administration of the Paymaster's Department.

The administration of the Pay-Chest will be superintended by a committee composed of the Captain who is nominated Traffic Manager, the Lieutenant of the head office, and the Paymaster of this department, who will form "the Committee for the Administration "of the Pay-Chest of the Military Railway from Berlin to the Practice "Ground." They have the use of the stamp of the Traffic Department, and will be governed by the regulations in force for a regimental pay-chest as modified and supplemented for the Battalion.

Berlin, 31st Aug., 1875.

The above Cabinet Order, as well as the accompanying Statute, are issued for the information of the Army.

(Signed.) VON KAMEKE.

The line was opened to the public in November, 1875, and was worked by each company of the Battalion for a month at a time. The officer who at first did the duty of Locomotive Superintendent, the Sergeant and Under-officers employed as engine-drivers, had been trained for a year previously on the Eastern Railway, and held certificates. For a week the regiment of Grenadiers, François Joseph, was conveyed daily to the practice ground at Zossen, returning in the evening. At another time, practice was given in loading and unloading such material as would constantly be used in war. An excellent example of the efficiency attained, and of the rapidity with which work can now be performed, is afforded by one of the latest services rendered. On the 17th February the Board of the Berlin-Dresden line applied to the Colonel in command for a detachment, to re-establish the communication interrupted by the flooding of the River Dahme, an affluent of the Spree, which had destroyed a large portion of embankment. Colonel Schulz lost no time in requiring explanations or, making enquiries of any sort whatever. Three hours after its receipt, the Chief of the Army Staff had been consulted, the company to furnish the detachment had received its orders, the material required for the work had been brought to the station and loaded; in fact every preparation had been made in one-eighth of the time in which civil engineers and men, under the most favourable circumstances, could have been collected together. On Friday the 18th, the same morning that they arrived, they began the works in the bed of the Dahme, and at about the same hour on Monday morning the heaviest traffic was able to pass over the gap on a permanent bridge, 40 ft. long, of wooden longitudinals, supported on four rows of piles. The work was directed by Major Golz.

A glance at the Budget for 1876 shows that the advancement of the new regiment is being pushed forward vigorously, and that there is no appearance of allowing it to remain inactive. The sum of £3,000 is asked for as a special item this year to purchase an iron bridge, a practical trial of which has been strongly recommended by the Great General Staff. It was designed by Mr. Stern, engineer of

Carlsruhe, for the purpose of rapidly and efficiently replacing railway bridges which have been destroyed, and its construction has given satisfaction to the Prussian Minister of Commerce. It provides £2,000 for the railway to the practice ground at Zossen; £300 for special tours of reconnaissance to be made by the regiment; £1,100 for the annual special manoeuvres; £10 for small-arm ammunition for musketry practice, and £1,050 for contingencies. A new item occurs amongst the sums devoted to the Great General Staff, £850 to training field officers of the Staff to the duties of "Line Commandants," duties which we have seen play an important part in the route service organization scheme. It is proposed to name three this year, but from the tone adopted it is certain that this number will be added to very shortly. "The increase is necessitated by the complication of military "transport, and the desirability of practising the work of 'Line Commandants' during peace. Only three are named, as the best scheme for their duties is not yet decided upon." A sum of £2,610 is asked for for the office expenses of the military railway authorities, printing of time-tables, stationery, copies of regulations and the like. This item shows an increase of £1,050 upon last year.

In any subsequent war Germany will possess in the Prussian Railway Regiment an organization which will have an influence hitherto unparalleled, upon all military operations. Its creation has given rise to a new arm. Exercised in peace to manoeuvre independently under the exclusive direction of its officers, it will act in concert with the army, assisting in invading, occupying, defending or evacuating strategic points, represented by the principal stations. It will be engaged in the most exposed part of the iron road comprised within the field of operations, and will be called upon to show not only the punctuality and precision of railway traffic, but discipline, military spirit, and power, as well as science, in manoeuvring. As part of the valuable system of route service possessed by the Germans, it enables them to spread rapidly into the enemy's territory, to seize and turn to their own use in a moment all local resources, paralysing the patriotism of the population; with cavalry to flank and reconnoitre in advance, it is the most rapid instrument in bringing up reinforcements of infantry to an important station seized by cavalry, or a central dépôt of stores insufficiently defended. When acting on the defensive, the enormously extended frontier of Germany renders this arm equally indispensable, in order to meet the enemy in overpowering numbers at any point. Nothing perhaps strikes a reader of the "History of the War by the German Staff" with greater force than the following quotation from page 82 of the first volume:—"The report made in the winter of 1868-69, served without any modification, as the basis of the principal dispositions taken upon the declaration of the war in 1870. In anticipation of the adoption of the plan proposed, all preparatory steps had been completed, down to the smallest detail; and upon His Majesty's approval of it, after his arrival in Berlin, there remained only to write in the day for commencing the mobilization, in the tables of the movements and transports, which had been prepared for each fraction of the

"army by the railway department of the Staff, and the movement was commenced."

Railways enabled MacMahon to withdraw his army after defeat at Wörth to Chalons, where he was joined by corps also brought by rail from Belfort and Paris, but the want of organization in the administration caused great suffering to the men, who could not leave their carriages for an incredibly long period. Railways permitted Canrobert to quit Chalons at the last moment with a large portion of his corps, and take part in the decisive battles round Metz; but on the other hand, the absence of a trained staff to restore the portion of line between Fronard and Metz, destroyed by the Prussian cavalry on August 13th, obliged him to leave a large part of his artillery behind, a result which weighed heavily against the French in the issue of the battle of the 18th. It was due to the re-establishment of the lines by the Prussian and Bavarian Railway Corps, and in particular the line from Amiens to Rouen, that the investment of Paris on the north could be assured over a very wide circle by a much smaller force than that opposed to them. The loop-line, 63 miles long, from Remilly to Pont-à-Mousson, constructed by the First and Fourth Prussian Railway Sections, to avoid Metz, is a matter of history. It is no exaggeration to say, that the lamentable conclusion of Bourbaki's expedition eastwards, was due to the inefficient administration of the railways he was employing. Between Bourges and Chalons-sur-Saône, his army could not be moved backwards or forwards owing to the block on the line. They remained *eight days* in the carriages, in intense cold, and without sufficient food. Could anyone expect them to have retained their morale when they arrived at their journey's end?

With such facts before us, it cannot but be a matter of regret that England makes no effort to provide a military body trained to a practical and technical knowledge of railway management. Will it require an experience more costly than even that of the Crimea, to show that the time for the further development of this branch has arrived? In case of invasion, no doubt patriotic ardour will hasten to provide the means to the same end; railway officials throughout the kingdom will afford their utmost assistance. But zeal and patriotism, without a pre-arranged and organized system, in a matter requiring the greatest precision and method, will not suffice. There would not be much difficulty in creating a military body similar in character to that which has formed the subject of this article, and which might become the nucleus of further expansion in case of war either at home or abroad. We shall do well, therefore, to remember that the "extraordinary requirements arising out of recent great changes and improvements in the means and appliances of warfare, render the necessity more imperative than formerly, that dependence should not be placed upon exceptional talent, nor upon lavish expenditure, to provide at the moment of action all that may have been omitted during peace in our administrative organization."

NOTICES OF BOOKS.

Historical Records of the First Regiment of Militia or Third West York Light Infantry.—By Captain G. A. RAIKES, Third West York Light Infantry Militia; Lieutenant-Instructor of Musketry, Hon. Artillery Company. Price 21s.

CAPTAIN RAIKES deserves the gratitude of all connected with the Third West York for the enormous amount of labour and time which he must have expended in compiling the records of the regiment. The interest of the volume is of course mainly local. Captain Raikes must, however, have at hand an abundance of information connected with the old constitutional force, considered as one branch of national defence. It is to be hoped, therefore, that in view of the exhaustion of the present edition of the records by local requirements, the author will in good time turn his energies and abilities to the preparation of the work from which he has here advisedly withheld his hand, namely, a general history of the militia of the United Kingdom.

Captain Raikes will forgive us reminding him that he has somewhat inverted the importance of the titles of the corps of which he has shown himself so able an historian. His avowed object in compiling the records is to aid in maintaining *esprit de corps*. The *esprit de corps* of a militia regiment is intimately connected with locality; the place of honour in the title page should therefore be given to the "West York Light Infantry," not to to the "First Regiment of Militia." This task of plain and simple duty conscientiously performed, reflects credit on the West Riding; it is as belonging to the West Riding of Yorkshire that we would see the *esprit de corps* of the regiment fostered, and not merely as the fortunate (?) corps whose precedence is the result of an after-dinner ballot.—(O.)

Leitfaden für den Unterricht in der Dienst-Kenntniss auf den Königlichen Kriegsschulen.—By Captains SCHNACKENBURG AND BARTELS. Berlin. A. Bath, 1876. Pp. 93.

It is not the lack of professional books that the German Officer can ever plead as an excuse for ignorance of any part of his duties. Their name is simply legion. The present "Guide to Instruction in Military Regulations at the War Schools," is one of many others which treat of the same subject; in this case, however, the book has the official sanction of the Inspector General of Military Education, and therefore its facts may be accepted as perfectly correct, which indeed on investigation they prove themselves to be.

"Dienst-Kenntniss," or as it is here translated, "Military Regulations," includes at the War Schools not only a knowledge of the organization and formation of the army, but also of the arrangements for recruiting, mobilization, and preparation for war, the command

and administration of the army, interior economy, garrison duty, duty on the line of march, in quarters and in camp, and military law.

Such a vast range of subjects cannot obviously be exhausted in a pamphlet of some 90 pages. It is a mere bald sketch of the subjects, intended to be enlarged upon and amplified by the instructor in his lectures. Consequently the guide is of too cursory a nature to be of much use as a book of reference to any but a German Officer. Still the sketch of the organization of the army, corrected up to the most recent date, will be found sufficiently full for those at all acquainted with the German Army who wish for information but have not the inclination to consult the more detailed works of Fröhlich v. Witzleben or v. Helldorf.

Sur la Dispersion Naturelle des Projectiles et la Loi des Erreurs.—Par ALOYS VAN MEYDEN, Capt. Artillerie. Lusanne, 1876.

A knowledge of the laws of the deflection of projectiles is necessary to the practical artillerist, in order to enable him to form a just estimate of the probable performance of his gun under certain circumstances. An acquaintance with the calculus of probabilities, as laid down by recent mathematical writers, and with the method of least squares of Legendre, is essential to a proper comprehension of the subject. The object of the pamphlet before us is, taking the established formula for granted, to show its application in order to determine under certain circumstances the performance of any particular gun:—i.e., the chance of hitting an object in a certain number of rounds. The subject is gone into very fully and in a few clearly written pages; the question is brought thoroughly within the grasp of anyone possessing the necessary mathematical qualifications to follow the reasonings of the author. We strongly commend this pamphlet to the attention of scientific gunners, as well as to those engaged in astronomical or geodetical operations, as being a clear exposition of a difficult subject.

Campaign of 1870-1. The Operations of the Corps of General v. Werder. Compiled from the Official Documents by LUDWIG LÖHLEIN, late Captain 1st Baden Body Guard Grenadier Regiment. Translated by Lieutenant F. T. MAXWELL, Royal Engineers. Gale, Chatham. P.p. 171. Price 5s. 6d. Weight 1 lb.; size $8\frac{3}{4}'' \times 5\frac{3}{4}'' \times \frac{3}{4}''$.

LIEUTENANT MAXWELL has done good service by placing before the public a translation of Löhlein's account of this portion of the campaign of 1870-1. The operations of the XIVth Corps are very interesting. General Werder fought long and well against a force far superior in point of numbers, though inferior in most other respects. It would be difficult to say whether the regiments or the Staff had the harder work to perform. The task which devolved on General Werder was thoroughly well executed, under circumstances which were in the highest degree trying.

A close and careful study of the book, which is well provided with plans and maps, will well repay the military student.

The Journal

OF THE

Royal United Service Institution.

VOL. XX.

1877.

APPENDIX.

PROCEEDINGS OF THE FORTY-SIXTH ANNIVERSARY MEETING.

THE FORTY-SIXTH ANNIVERSARY MEETING of the Members was held in the Theatre of the Institution, on Saturday, March 3rd, 1877.

The Right Hon. GATHORNE HARDY, M.P., Secretary of State for War, in the Chair.

I. The SECRETARY read the notice convening the Meeting.

II. The Secretary read the Minutes of the Forty-fifth Anniversary Meeting.

III. The Forty-sixth Annual Report was read as follows:—

1. The Council have the pleasure of laying before the Members their Forty-Sixth Annual Report.

MEMBERS.

2. Thirty-eight Life Members and one hundred and twenty-four Annual Subscribers, making a total of one hundred and sixty-two new Members, joined the Institution during the past year. The loss by death amounted to seventy-two, and forty-two Members withdrew their names, whilst the names of thirty-six have been struck off the list in consequence of the non-payment of their subscriptions for many years, after frequent applications. The increase therefore is twelve.

A detailed statement of the changes in the List of Members, and a tabular analysis of the present and past state of the Institution, will be found on pages 7 and 8.

FINANCE.

3. The usual Abstract of the Yearly Accounts, as audited on the 7th February, will be found on the following page.

**GENERAL ABSTRACT OF THE ACCOUNTS OF THE ROYAL UNITED SERVICE INSTITUTION,
FROM 1ST JANUARY TO 31ST DECEMBER, 1876.**

EXPENDITURE.			RECEIPTS.		
	£	s. d.		£	s. d.
Secretary's Salary ..	350	- -	Balance at Bankers, 31st December, 1875 ..	281	- -
Ditto ..	50	- -	Annual Subscriptions, at 10s. ..	2,475	15 9
Librarian's Salary ..	...	...	" " above 10s. arrears ..	41	12 -
Clerk's Salary ..	...	...	" " advance ..	14	2 -
Servants' Wages ..	...	...	Increased Subscriptions, at 10s. ..	1	- -
Ditto Clothing ..	...	...	Entrance Fees ..	2,794	9 9
Insurance ..	...	...	Dividends ..	162	- -
Ground Rent ..	...	...	Donations ..	301	11 6
Fuel ..	...	...	Interest on Exchequer Bills ..	1	11 -
Lighting ..	...	...	Government Grant ..	16	12 9
Assessed and Income Taxes ..	...	...	Sale of Journals ..	600	- -
Parish and Water Rates ..	...	...	Miscellaneous Receipts ..	113	1 -
Artificers ..	...	...		13	6 7
Museum ..	...	...	
Gold Medal ..	...	...	
Library, Reading, and Topographical Rooms ..	...	...	
Advertisements ..	...	...	
Printing Circulars and Stationery ..	...	...	
Lectures ..	...	...	
Journals, including Annual Report and List of Members ..	...	...	
Postage { Letters ..	23	19 6			
{ Journals ..	145	12 -			
House Expenses and Sundries ..	...	...	
Gratuity ..	...	...	
Cash repaid to Agents ..	...	...	
Charges from ditto ..	...	...	
Balance at Bankers ..	...	...	
For £583 14s. 0½ p. cent. Consols ..	...	...	Balance of Life Subscriptions at Bankers, 31st December, 1875 ..	£1,101	7 -
Balance at Bankers ..	...	...	Life Subscriptions ..	...	127 - -
				...	487 10 -
Total Income and Life ..	...	...	Total Income and Life ..	...	£4,665 17 -

Examined and found correct, 7th February, 1877.

J. E. A. DOLBY, } Auditors.
TOB. G. RIDGWAY, }

T. D. SULLIVAN, Accountant.

ESTIMATE OF RECEIPTS AND EXPENDITURE FOR THE YEAR 1877.

EXPENDITURE.			RECEIPTS.		
	£	s. d.		£	s. d.
Secretary's Salary and Lodging allowance	400	- -	Balance at Bankers, 31st Dec., 1876	105	- -
Librarian and Accountant's do. ..	220	- -	Annual Subscriptions :		
Clerk's do.	104	- -	£ s. d.		
Servants' Wages	520	- -	At 10s.	260	- -
Ditto Clothing	75	- -	Above	2,510	- -
Insurance	18	- -		2,770	- -
Ground Rent	205	- -	Entrance Fees	170	- -
Fuel	70	- -	Dividends	370	- -
Lighting	70	- -	Interest on Exchequer Bills	20	- -
Assessed and Income Taxes ..	65	- -	Government Grant	600	- -
Parish and Water Rates ..	100	- -	Sale of Journals	100	- -
Artificers, Repairs, &c. ..	100	- -	Miscellaneous Receipts ..	40	- -
Museum	50	- -			
Gold Medal	12	- -			
Library and Topographical Departments	250	- -			
Advertisements	100	- -			
Printing Circulars, & Stationery	200	- -			
Lectures	65	- -			
Journals, including Printing Annual Report and List of Members	1,200	- -			
Postage of Journals	200	- -			
Postage	30	- -			
House Expenses and Sundries	60	- -			
Balance	61	- -			
Total.. ..	£4,175	- -	Total.. ..	£4,175	- -

LIFE SUBSCRIPTIONS.

4. Life Subscriptions to the amount of £583 14s., including £127 not invested in 1875, have been invested in Three per Cent. Consols.

CAPITAL ACCOUNT.

5. The funded property of the Institution on the 1st January, 1877, was £11,304 15s. 3d., as compared with £10,721 1s. 3d., on the 1st January, 1876.

THE FUTURE LOCALITY OF THE INSTITUTION.

6. A Memorial, signed by His Royal Highness the President, has been presented to the Right Hon. The Earl of Beaconsfield, First Lord of H.M.'s Treasury (for Memorial see page xvii), praying that when the appropriation of the Crown lands in the neighbourhood of the Institution

takes place, its claim for a permanent site, may receive due consideration; and a deputation from the Council waited on Mr. W. H. Smith, M.P., one of the Secretaries of the Treasury, with a similar object. He assured the deputation that the value of the Institution is fully recognised by the Government, and that when the proper time arrives, the claims of the Institution will be duly considered.

LECTURES AND JOURNAL.

7. The Council desire to record their best thanks to those Gentlemen who, during the past year, contributed much valuable information on professional subjects. Eighteen Lectures were delivered, and fifteen Papers were read in the Theatre of the Institution.

A portion of the Journal is now reserved for the publication of articles, original or compiled, on Foreign professional subjects, also for notices of professional works, either Foreign or English. This arrangement promises to be very successful in affording much valuable information to the Members. The superintendence of this part of the Journal has been kindly undertaken by Major Lonsdale Hale, R.E.

The Council earnestly invite the co-operation of the Members in supplying Lectures or other subject-matter for the Journal, and in otherwise maintaining the high character which it bears both at home and abroad.

LIBRARY.

8. Six hundred and ninety-eight volumes were added to the Library during the past year; of these, 140 were purchased and 458 presented. Among the latter, the following are the most noteworthy:—

By the AUSTRIAN Government—

Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens.
Mittheilungen aus dem Gebiete des See-wesens.
Organ des Wiener Militär-wissenschaftlichen Vereins.
Official Account of the Italian War of 1859, 3 vols.

By the FRENCH Government—

Revue Maritime et Coloniale.
„ Militaire de l'Etranger.

By the GERMAN Government—

Archiv für die Artillerie- und Ingenieur-Officiere des Deutschen Reichsheeres.
Jahrbücher für die Deutsche Armee und Marine.
Militärische Blätter.
Militär-Literatur-Zeitung.
Neue Militärische Blätter.

By the NETHERLANDS Government—

Four Plates of "Matériel de l'Artillerie."

By the RUSSIAN Government—

Engineering Journal.

Naval Review.

By the SPANISH Government—

Memorial de Ingenieros.

By the SWEDISH Government—

Krigs-Vetens-Kaps Akademiens Handlingar.

By the UNITED STATES Government—

Fifteen Volumes, on various Naval and Military subjects.

The exchange of Journals with Foreign Governments, and with various Scientific Societies, in this and other Countries, has been continued.

The Library now contains upwards of 17,700 volumes.

Of the volumes presented, about one hundred were given, shortly before his decease, by the late J. W. Fleming, Esq., F.R.C.S., Surgeon-Major, formerly of the 37th Regiment and 4th Royal Irish Dragoon Guards. The Council have thanked on several previous occasions that Officer for gifts of rare works and medals.

The late Capt. Arthur C. Tupper was a frequent contributor to the Library, and bequeathed to the Institution a collection of Memoranda on Naval, Military, Antiquarian, and general subjects, carefully indexed. The Council deeply regret the loss the Institution has sustained by his death. He was a zealous Member of the Council for nearly twenty years, and gave valuable assistance in organizing and maintaining the Museum.

TOPOGRAPHICAL DEPARTMENT.

9. The Secretary of State for War has presented Photographs and Lithographs of Guns, Casemates, Shields, Targets, &c., and copies of works published by the War Office.

The Institution has also received from the Lords Commissioners of the Admiralty, Charts, Sailing-Directions, and other valuable works.

MUSEUM.

10. The additions to the Museum and to the Library will be found in the Proceedings of this day's Meeting, and in the Appendix to Vol. XX of the Journal.

Want of space has prevented many other additions being made to the Collection of Models in the Museum.

The several Foreign Governments, the Secretaries of State for War and India, the Lords Commissioners of the Admiralty, and the various Donors, have been thanked by the Council for their respective presents to the Library and Museum.

VICE-PATRONS.

11. The Council regret to record the death of one of the Vice-Patrons of the Institution, Field-Marshal the Marquis of Tweeddale,

K.T., G.C.B. The Marquis of Tweeddale became a Member in 1840, and was elected a Vice-Patron in 1875, on his promotion to the rank of Field-Marshal.

The Council have had the pleasure of electing Admiral of the Fleet Sir Provo W. Parry Wallis, G.C.B., a Vice-Patron of the Institution.

HONORARY MEMBERS.

12. The Council have had great pleasure in electing Lady Sarah Lindsay an Honorary Member, in recognition of the long and valuable services rendered to the Institution by the late Lieut.-Gen. the Hon. Sir James Lindsay, K.C.M.G., and in acknowledgment of a present made by her of historical interest, viz., two chairs formerly used by the Emperor Napoleon the 1st at Malmaison.

Several Foreign Officers have been admitted as Honorary Members during their stay in this country.

CORRESPONDING MEMBERS OF COUNCIL.

13. On the 1st January, 1877, there were 336 Corresponding Members of Council; the Council thank them for their past services, and trust that they will continue their efforts to make the advantages of the Institution more widely known.

GOLD MEDAL.

14. At the last Anniversary Meeting, the Gold Medal of the Institution was awarded to Commander Gerard H. Noel, R.N., for his Essay on "The Best Types of War-Vessels for the British Navy."

The subject for the year 1876 was announced as follows, viz.: "On the Causes which have led to the Pre-eminence of Nations in War." Seventeen Essays have been sent in; the award by the Officers who kindly undertook the duties of referees, viz., General J. R. Craufurd, General Charles Stuart, and Major-General Collinson, R.E., will now be made known to the Meeting.

The subject for the Essay for the current year is as follows, viz.:—

"Great Britain's Maritime Power; how best developed as regards—

1. Fighting Ships.
 2. Protection of Commerce.
 3. Naval Volunteer or Supplemental Force.
 4. Colonial and Home Defence;—
- the Classes, Armament, and description of the Vessels needed; and the organization required to secure a Powerful and Economic Imperial Naval Force."

CONCLUSION.

In conclusion, the Council congratulate the Members on the satisfactory state of the Finances, and on the general efficiency of the Institution.

STATEMENT OF CHANGES AMONG THE MEMBERS SINCE
1ST JANUARY, 1876.

	Life.	Annual.	Total.
Number of Members, 31st December, 1875 ..	1,102	3,206	4,308
" " joined during 1876 ..	38	124	162
	<hr/>	<hr/>	<hr/>
	1,140	3,330	4,470
Changed from Annual to Life	+12	-12	
	<hr/>	<hr/>	<hr/>
	1,152	3,318	4,470
	<hr/>	<hr/>	<hr/>
	Life.	Annual.	
Deduct—Deaths during 1876 ..	16	56	
Withdrawals.. ..	.. —	42	
Struck off .. ..	.. —	36	
	<hr/>	<hr/>	
	16	134	
	<hr/>	<hr/>	
	16	134	150
	<hr/>	<hr/>	<hr/>
Number of Members on 1st January, 1877	1,136	3,184	4,320
	<hr/>	<hr/>	<hr/>

TABULAR ANALYSIS OF THE STATE OF THE INSTITUTION

To 31st of December, 1876.

Year. 1st Jan. to 31st Dec.	Annual Subs. received.	En- trance Fees.	Income (from all sources).	Life Subs. received.	Amount of Stock.	Invested in the purchase of Books, &c.	No. of Vols. in Library.	No. of Mem- bers on the 31st Dec.	Number of Visitors
£	£	£	£	£	£	£			
1831	654	..	654	1,194	..	..	..	1,437	..
1832	1,146	..	1,146	973	..	..	..	2,699	..
1833	1,405	..	1,450	692	..	..	..	3,341	..
1834	1,500	..	1,549	583	1,100	..	..	3,748	13,376
1835	1,480	..	1,574	366	2,430	40	..	4,155	8,537
1836	1,570	..	1,682	330	3,747	45	..	4,069	8,521
1837	1,549	..	1,747	222	4,747	180	..	4,164	10,907
1838	1,462	..	1,634	230	5,500	246	..	4,175	15,788
1839	1,399	..	1,565	168	5,500	292	..	4,186	16,248
1840	1,363	..	1,525	198	5,500	446	5,500	4,257	17,120
1841	1,450	..	1,643	186	6,000	243	5,850	4,243	19,421
1842	1,373	..	1,565	144	6,400	373	6,450	4,127	21,552
1843	1,299	..	1,494	140	6,700	237	7,000	4,078	27,056
1844	1,274	..	1,408	112	3,000	298	7,850	3,968	22,767
1845	1,313	..	1,466	228	1,500	127	8,100	3,988	21,627
1846	1,298	..	1,456	138	1,500	74	8,410	4,031	32,885
1847	1,314	74	1,502	132	1,700	37	..	4,017	38,699
1848	1,175	57	1,375	48	1,700	85	9,641	3,947	37,140
1849	1,176	72	1,375	84	1,150	58	..	3,970	33,333
1850	1,141	106	1,294	198	600	36	..	3,998	33,773
1851	1,136	131	1,292	66	666	34	10,150	3,188	52,173
1852	1,134	133	1,281	114	200	43	10,300	3,078	20,609
1853	1,243	319	1,684	264	528	41	10,420	3,251	25,952
1854	1,200	138	1,368	126	612	95	10,587	3,171	22,661
1855	1,159	107	1,289	120	653	55	10,780	3,131	14,778
1856	1,216	197	1,519	156	761	47	10,832	3,204	16,184
1857	1,258	176	1,937	78	1,038	40	10,960	3,168	12,755
1858	1,318	221	2,102	105	438	31	11,062	3,246	25,747
1859	1,526	195	2,277	512	946	70	11,320	3,344	28,739
1860	1,961	298	3,577	397	2,178	114	11,517	3,518	28,011
1861	2,122	305	2,899	266	2,846	99	11,812	3,689	23,296
1862	2,296	242	3,127	239	3,178	109	12,026	3,797	27,215
1863	2,379	218	3,100	405	3,583	143	12,296	3,847	18,160
1864	2,425	215	3,253	222	4,516	116	12,700	3,902	17,276
1865	2,435	154	3,467	235	4,804	137	13,000	3,895	18,253
1866	2,435	157	3,488	299	5,486	150	13,337	3,891	17,067
1867	2,431	141	3,467	208	5,732	140	13,800	3,823	17,211
1868	2,446	184	3,534	297	6,396	119	14,100	3,812	16,417
1869	2,368	165	3,485	238	6,653	232	14,669	3,792	15,947
1870	2,376	178	3,493	333	7,313	140	15,055	3,831	18,654
1871	2,455	237	3,677	538	7,748	202	15,501	3,922	19,420
1872	2,620	336	4,111	713	8,927	192	15,761	4,116	19,773
1873	2,776	295	4,316	535	9,465	222	16,227	4,276	18,183
1874	2,819	216	4,491	409	10,189	218	16,624	4,330	16,771
1875	2,801	154	4,595	469	10,721	228	17,000	4,308	15,960
1876	2,794	162	4,500	437	11,305	171	17,700	4,320	15,548

IV. Lord ELCHO, M.P. :—

Mr. Hardy and Gentlemen,—When I came down here punctually at twelve o'clock, I had not the remotest conception that I was to be asked to move the adoption of a Report which I at that time had not read; but representing a branch of the Reserve Forces, and being therefore amenable to military discipline, and many persons supposing that the Volunteers are not a really disciplined force, and do not readily yield to discipline,—which I need not say is a great libel on that force,—I thought if I declined on this occasion to move a Report, of which I knew nothing, I should fall under that censure justly, and therefore I submit, and here I am, pressed into this service, finding applied to the Reserve part of the Forces that system which used to be practised in the great war with reference to manning the Navy. I am suffering from being pressed into the Service, though I must say I am a very willing pressed man. You have heard the Report read, and if I were to speak here for a week, I do not think I could say more than that the Report appears to me thoroughly satisfactory. One of our best soldiers is, I find, to second this motion, I mean the distinguished officer Sir Lintorn Simmons, and anything, therefore, that is necessary to be said upon the military or other bearings of the Report, will no doubt be most thoroughly said by him, but as a semi-civilian Member of this Institution, and a Member of Parliament, one part of the Report I look upon with great satisfaction, that part which refers to the locality, the building, and the probable future of this Institution. It will be in the recollection of Members of the Institution that at one time this, what I may call very valuable Institution, was put in considerable peril of being swept away from here, and we wondered where we should pitch our tent. There was considerable feeling with regard to the matter at one meeting, when I think the Duke of Cambridge was in the chair. Remonstrances were made, and the late Government were ready to admit the importance of this Institution. Well, this question appears by the Report to be again arising, and it is gratifying to find that the succeeding Government, of which Lord Beaconsfield is the head, and of which I am happy to say we have a distinguished member here in the chair to-day, the Secretary of State for War, who must naturally take a sort of parental interest in this Institution, are also favourably disposed to give us a site, if necessary to take the ground which this building now occupies. I think we may congratulate the Institution upon that. In connection with that subject, I see there is a paragraph in the Report to this effect :—"Want of space has prevented many other additions being made to the collection of models in the Museum." Now we who know how valuable and interesting these models are, feel that it is very desirable that additions to such a Museum should not be prevented by want of space. That appears to be another reason why the Government should favourably consider any question of giving us a better building or an extension of space whereon to build. Having said this much, I will leave Sir Lintorn Simmons to say anything that may be desired on military or other matters. I will only say this, that I am sure every one must feel the value of this important National Institution; and feeling that as we all do (or we should not be here), I may I think ask you heartily to join in the conclusion of the Report, which is, that "the Council congratulate the Members on the satisfactory state of the finances,"—for finances are the sinews of an Institution as well as of war,—and on the general efficiency of the Institution." As a Member of the Institution I may be allowed, on behalf of the Members, to do what the Council cannot do for themselves, congratulate them on the management of the affairs of the Institution in such a satisfactory manner. I will now, without further preface, move, "That the Report now read, be adopted and printed for circulation among the Members."

Lieut.-Gen. Sir LINTORN SIMMONS, K.C.B., R.E. :—

After what has fallen from his Lordship, there is very little for me to say as to the fabric of this Institution. I think we may recall the old saying, that one volunteer is worth two pressed men. I do not know in what capacity his Lordship has appeared on this occasion. He certainly appeared as a pressed man, but he

must be a very valuable volunteer if he is worth twice what he has shown himself worth on this occasion. I have very few words to say with regard to the Report, but I think there are one or two facts in it which are of great interest. First of all, with reference to the state of our Library. When I first entered the Service, nearly forty years ago, there was scarcely any literature in the English language on military subjects, and very little discussion on them, and this Institution has taken a very honourable part in promoting the study of professional subjects throughout the Army and Navy. So little were books written on professional subjects in former days, and so little circulation had they, that I may mention a case that came under my own knowledge of a scientific work written in the English language, which was translated into French and had an enormous circulation in France, while to my certain knowledge never more than 200 or 300 copies were disposed of in this country. That shows pretty much what the state of study was in former days. Happily we have come upon very different times, and now, if officers either of the Army or the Navy wish for success, they must study, and I think this Institution has done a great deal by collecting such a first-rate Library, which affords a mine from which officers may extract the ore which is afterwards worked up into valuable essays and discussions in this room, and which also supplies means of study for all officers visiting London. The Library has been greatly frequented, and we must congratulate ourselves on the possession of it. As regards the Lectures, also, I think there has been very great and valuable progress. I think it was in 1851 or 1852 when the first discussion took place in the Theatre of this Institution on a military subject, and I remember taking part in that discussion, and being sent for to the Ordnance Office and severely wiggled; and I was reminded that there was a station in the West Indies which I might have to visit for the sake of my health. I think that that state of things has passed away. The Secretary of State for War would scarcely send for an officer now-a-days and wig him if he discussed a subject of general interest. The subject of that first discussion was a purely scientific one; it was a system of fortification proposed by Mr. Ferguson. The Authorities did not wish to have it discussed, because it interfered with their own prejudices, and that was the manner in which they attempted to gag officers. I think we have arrived at a better time than that, and so long as the Council do not admit into the discussions subjects touching upon discipline, we shall be perfectly safe on the lines on which we have worked for so many years. I have, therefore, great satisfaction in seconding this resolution, because the Institution is serving a very useful purpose indeed as regards the Army. There is one other point. I see in the accounts £1,200 a year expended in issuing the Journal. This Journal has become a most valuable military handbook; it goes to all parts of the world; it is studied by officers wherever they are in distant regions; it communicates to them knowledge which formerly could only be obtained by visiting the Metropolis or Woolwich; and it keeps them *au courant* with whatever is on the *tapis* in this country with regard to military subjects. I am happy to see that there is an extension proposed, under the direction of my brother officer, Major Hale, by which the Journal will contain extracts and *résumés* of foreign works. I think this will be of the greatest possible advantage to the Institution. I have, therefore, much pleasure in seconding this resolution.

The Resolution was put from the Chair, and was carried unanimously.

V. Names of the Members who retire from the Council by rotation:—

Major-Gen. Sir HENRY R. GREEN, C.B.,
K.C.S.I.

W. F. HIGGINS, Esq.

Major-Gen. F. M. EARDLEY WILMOT,
R.A., F.R.S.

Admiral of the Fleet Sir HENRY J. COD-
RINGTON, K.C.B.

Vice-Admiral Sir J. WALTER TABLE-
TON, K.C.B.

Rear-Admiral M. S. NOLLOTH.

Brigadier-Gen. the Hon. FREDERIC
THESIGER, C.B., A.D.C. to the
Queen.

Lieut.-Gen. Sir GEORGE BALFOUR, K.C.B., M.P. :—

Mr. Hardy, my Lords, and Gentlemen,—I have also been called upon unexpectedly to propose a resolution, but I need not say with what pleasure I perform the duty, because, considering this Institution to be of great national importance not only to the country but likewise to the Army and Navy, I am always prepared to give any assistance in my power to promote the objects which it has in view. I need not say, Mr. Hardy, that the progress which my noble friend behind me (Lord Elcho) and my friend General Simmons have shown to have taken place with regard to this Institution, has been one of continued success. We have never ceased to progress from the time this Institution was established, and we have now arrived at a highly satisfactory result. Now that progress never could have been secured, had it not been for good management on the part of those who conducted its affairs. It is to those gentlemen, therefore, that I am now called upon to propose a resolution of thanks,—to those gentlemen who for the past year have managed the affairs of this Institution, and who now retire by rotation. I am sure that is a duty which every Member will readily perform, for we cannot give too much credit to those gentlemen who devote their time and leisure to the performance of such important services. Without detaining the Meeting longer, I beg to propose, "That the thanks of this Meeting be given to the Members of the Council who retire by rotation." I have also had the duty given to me to propose the following gentlemen to succeed them :—

Major-General Sir HENRY
R. GREEN, C.B., K.C.S.I.
W. F. HIGGINS, Esq.
Admiral of the Fleet Sir
HENRY J. CODRINGTON,]
K.C.B.

For
re-election.

Captain H. F. NICHOLSON, R.N.
Colonel H. C. FLETCHER, C.M.G., Com.
2nd Batt. Scots Fus. Gds.
Major-General D. LYSONS, C.B.
Major-General Sir FREDERIC J. GOLD-
SMID, C.B., K.C.S.I.

And "that the following names be adopted from which to select, in the event of vacancies occurring in the Council," viz. :—

Colonel the Hon. PERCY FEILDING, C.B., Colonel Lord ELCHO, M.P., Comd. Lon-
Commanding the Coldstream Gds. don Scottish Rifle Volunteers.
Rear-Admiral JASPER H. SELWYN.

I am sure that the Members of the Institution will be most willing to elect those distinguished officers whose names I have read out, because they must be quite confident that those who are now named as worthy of the management of its affairs, will perform their duty in a manner which will be valuable to the Institution. I beg, therefore, to propose that resolution.

The Resolution having been seconded by Admiral Sir CLAUDE BUCKLE, K.C.B., was put from the Chair, and was carried unanimously.

VI. Colonel Lord WAVENEY, F.R.S. :—

The third resolution appears to be merely of a formal character; still it has its special recommendation in the nature of the services for which it is given, it is, "That the thanks of this Meeting be given to the Auditors for their valuable services." With regard to the services of Auditors, we know how largely they must enter into a well-arranged scheme of finance, and as a subsidiary matter of congratulation to the Institution, it appears to me that the accuracy with which the accounts are made out, and the minuteness of attention which has been paid to them, are most satisfactory. I, therefore, move, "That the thanks of this Meeting be given to the Auditors for their valuable services, and that the following gentlemen be elected for the ensuing year :—

T. G. RIDGWAY, Esq., for re-election.
T. E. DRAPER, Esq.

E. R. RAITT, Esq.
Capt. J. E. A. DOLBY.

Rev. Mr. HALPIN, Chaplain to the Forces :—

In seconding this resolution, perhaps if I were to do it without a word in addition, it would be better, yet as I feel a deep interest in the Institution, I may be allowed to make a remark. It is to the growing value of this Institution to which I wish specially to call attention. Thirty years ago I was indirectly connected with it, my father having been a Member. Then it was only considered an out-of-the-way place, not possessing much interest or value, where a few old gentlemen, retired from the Service, came to read a limited number of newspapers. Now we see the vast difference. Its scientific interest and value are recognised throughout the length and breadth of the country, yea, over the face of the world. Now to whom is this due? No doubt to the Managers of the Institution; and when we give thanks to the Auditors, it is thanking indirectly and through them, the Managers, the Council, and the Secretaries, who have brought this Institution to such a state of advancement, and have made it so valuable in the eyes of the whole Naval and Military community, and of the community at large. I will not detain the Meeting any longer, but beg leave to have the honour of seconding the resolution.

The Resolution was then put from the Chair, and was carried unanimously.

VII. The SECRETARY read the Report of the Referees on the Military Prize Essay, on "The Causes which have led to the Pre-eminence of Nations in War," and the Chairman announced the name of the successful candidate to be John Ross, of Bladensburg, Coldstream Guards, and presented him with the Gold Medal.

The SECRETARY then read the names of the writers of the five Essays honourably mentioned, viz.:—Colonel H. C. Fletcher, Scots Fusilier Guards; Lieut.-General Sir Richard Wilbraham, K.C.B.; Captain De Thoren, h.p. 38th Regiment; Lieut. H. Elsdale, R.E.; and Captain H. W. L. Hime, R.A. (Gold Medallist R.U.S.I., 1875.)

The CHAIRMAN announced the following to be the subject for the Prize Essay for the current year, to be rendered on or before the 1st November, 1877, viz.:—

"Great Britain's Maritime Power: how best developed as regards—

- 1st. Fighting Ships.
- 2nd. Protection of Commerce.
- 3rd. Naval Volunteers, or Supplemental Force.
- 4th. Coast and Home Defence;—

the Classes, Armament, and description of the Vessels needed; and the organization required to secure a Powerful and Economic Imperial Naval Force."

Admiral of the Fleet Sir HENRY CODRINGTON, K.C.B.:—

It is now my pleasure, as well as my duty, to propose a vote of thanks to the Referees for the trouble they have taken and the decision they have come to. I do not know that it is easy for us at once to estimate the difficulty of a judgment of this sort. Perhaps the mere fact that after adjudging the prize to one gentleman, they have had to name three or four others whose Essays are most excellent in their way, and recommend them for publication, will show the difficulty these gentlemen

have had in deciding. There are many points which go to a decision of this sort. The Referees have to consider the style of the Essays, the appropriateness of the language, the whole treatment of the subject; in short, to balance one consideration with another, is a very difficult matter indeed: and where the number of papers is great, the difficulty is very much increased by the necessity of bearing in mind the respective excellences of each paper read. In this case, there have been some most excellent papers, and the Referees have found it their duty to recommend several for publication. There is no question that we are very much indebted to those gentlemen who have taken all this trouble, and our best thanks are due to them. I have great pleasure, therefore, in proposing "A vote of thanks to General J. R. Crauford, General Charles Stuart, and Major-General Collinson, R.E., for their valuable services in adjudicating on the Military Prize Essay, for the trouble they have taken and for the decision they have come to."

The Resolution having been seconded by Major General F. C. A. STEPHENSON, C.B., was put from the Chair, and was carried unanimously.

The CHAIRMAN having announced that the business of the Meeting was concluded,

The Chair was taken by Sir Henry Codrington.

Admiral of the Fleet Sir GEORGE SARTORIUS, K.C.B. :—

Sir,—A very agreeable task has devolved upon me, viz., that of proposing that the thanks of this Society be given to one who bears a name so well-known and so highly honoured as yours. It is also a very favourable augury for an important object we have in view, viz., the obtaining a site for our Institution, that the War Office has taken so much interest in it; and this is an opportunity I should like to take advantage of to make a few observations upon the subject of the Memorial. If we could have an independent site for our Institution, that would be the most advantageous; but if that is impossible, in my dreams I have imagined some magnificent building, upon a very large scale, which should combine all the Scientific Societies of London under the same roof, so that we might move about conveniently and watch the proceedings taking place in all these Institutions. That would be of the greatest service to us individually and nationally. Whether that dream of mine can be realised or not, depends on a much higher power than myself to say, but in returning thanks to you, Sir, for the compliment you have paid us and the interest that you take in this Society, I must say that that interest gives us great hope that we shall not fail to have either my dream accomplished or an independent site.

Major-General SHUTE, C.B., M.P. :—

I have great pleasure in seconding the resolution. The merits and wants of this Institution have been so fully dilated on by other speakers, that it is quite unnecessary for me to trouble you with any remarks upon them. Our great object of course is, that my right honourable friend, the Secretary of State for War, should take the same deep interest in this most valuable Institution as he has shown in the British Army. No doubt there are sundry difficulties to be solved in connection with this Institution, but he has had greater with regard to the Army, and I have no doubt he will overcome the former in the same able manner as he has overcome the latter. Now, my Lords and Gentlemen, I know you must feel with me how deeply indebted the Army is, and all of us are, who are Members of this Institution, to the right honourable gentleman the Secretary of State for War. It would be in extremely bad taste were I on this occasion to refer to the various difficulties which he, in coming into office, has had to solve; but there are three which I may very shortly allude to, because every one here present, as I know from the Lectures I have attended, takes the deepest interest in them. The first difficulty was to know how we could

possibly have a moderately strong and fairly good Army with a Reserve; how in order to get greater numbers, we could add to the attractions of the Army. Now, my Lords and Gentlemen, our Secretary of State for War has solved that difficulty. We have found hardly any difficulty in procuring recruits this year, though the numbers are vastly increased. The other two questions yet to be solved, and which are also very difficult ones, are, how to make Short Service, which, mind you, is necessary for a Reserve, applicable to India? and how to secure a flow of promotion for the officers of the Army while, at the same time, keeping faith with them as regards the promises of the House of Commons? My Lords and Gentlemen, if we ever had a War Department capable of solving those difficulties, I am quite sure that Department, of which my right honourable friend is at the head, will be able to do it. I am certain you will most heartily vote him your thanks for the kind manner in which he has taken the chair on this occasion, and join with me in hoping that he will take that deep interest in this Institution which he has shown with regard to everything connected with the Army.

The Resolution was then put from the chair, and was carried with acclamation.

Mr. HARDY :—

My Lords and Gentlemen,—When I look at the clock and think of the amount of business that you have got through in three-quarters of an hour, it is an example which I could wish to see followed in another place. I am quite aware that officers, whose work is action, are very often men of very few words, indeed, I may say that almost in all cases those who are the most energetic, are those who express themselves most briefly. I shall endeavour to emulate the good example which you have all of you set, but at the same time I must say a few words with reference to my position as regards this Institution in connection with the office which I hold. Far from being like my predecessor, who occupied the building which is now the War Office in the times which Sir Lintorn Simmons has described, I have looked upon this Institution as one which is calculated to bring out and develop the talent of the young and to keep up the interest of the old in the advancing science and art which are applied now to all Military and Naval purposes. I do not think we could have a stronger proof of that than has been afforded by the Essays, for I find as competitors men so eminent as General Wilbraham and Colonel Fletcher, contending with anybody who chooses to enter the lists with them, their object being not to gain the Gold Medal for themselves, but to inform the public upon the subjects of the Essays. My opinion is very strongly this, that discussion upon these Military and Naval subjects is calculated to put us in possession of the best means of proceeding in both cases: you eliminate the weak points, you confirm yourselves in the strong ones. All Military and Naval subjects, other than those of discipline, which Sir Lintorn Simmons alluded to, are very fitly discussed, it seems to me, by those practically acquainted with them, and who bring to the knowledge of us who are not technically so acquainted with them, an amount of information which in no other so compendious a form could we obtain. It would be idle to suppose that a civilian brought into the position I now hold, could be able to acquaint himself with those works which, it appears from Sir Lintorn Simmons's statement, have only recently been begun to be studied by officers themselves; but we can look at the shorter essays read previously to discussions here, and from them we obtain a sufficient insight into what is going on, to be able to form our judgments. And let me say how much I value the assistance which I have received ever since I have been at the War Office, from officers in the Army. I have never called on any military officer in any department, whether the Line, the Artillery, or the Engineers—and I may speak especially of them in the presence of Sir Lintorn Simmons—without receiving an amount of disinterested and valuable assistance which I can never be sufficiently thankful for. It is indeed impossible for anyone to hold the office I do without receiving that assistance. I believe it is given with as pure a

feeling for the Army and for the benefit of the public as can possibly be conceived. There is no desire to keep back anything from anyone who holds the office I do, and it is his own fault if he does not obtain the information he needs. A great deal has been said, I think, with respect to the Library and the Journal. The Library, it seems to me, is of value not only to you, but, as Sir Lintorn Simmons has said, to the public at large, and it is a scientific library which I have no doubt finds students irrespective of the Army and Navy; because, if ever your services should be required on a great scale, you will, as far as I can understand, be obliged to call in assistance from the outside world, in engineering particularly, to develop the great works and machines which will be put in motion on such an occasion. When I read of a vessel like the "Alexandra" going to sea with thirty-five steam-engines on board, it makes me feel perfectly bewildered. Anybody who goes into a factory for the first time, and sees the wheels and spinning-machines going round him, supposes that nobody could ever get into a position to understand them, yet children do it; but I am quite sure no man can go in command of a ship like that, without an amount of scientific knowledge, which cannot be gained only by study of works, but by practical experience; and you will have to educate your officers up to the position they have to occupy in those ships, and not only that, but you will have to educate your Engineers for works of which you have hitherto had no conception. There is a development of power every day, which is become so great that you will have to consider two great questions—first, how to get strength to resist it; and next, how to get it with an amount of expenditure which the country would be justified in consenting to. One of the points I see in the Essay proposed for next year is, the economical mode of obtaining sufficient vessels for your purposes. Depend upon it that at the bottom of half the difficulties that surround you is this question of economy. It is the thing to which you must look, because if you do not do these things economically, there comes upon the nation every now and then a cold fit, and for the sake of saving money, it undoes that which you have done probably at an enormous expense. You must endeavour to do these things at a cheaper rate, and yet do them quite as well, and that is a study to which I would direct the attention of military officers as a subject for an essay some time or other—"How best you can fortify." For instance, whether you can suggest any cheaper mode of fortification than is adopted at present; because, if you cannot do that, I am convinced it will not be without great difficulty that it will be done at all. It is a question very much studied and very much considered I know, and it is one which will come to the front, because when you have these enormous ironclads sailing about the ocean and able to approach anything like an ordinary fortification without the slightest risk, you must prepare to meet them at those places which are most important to yourselves. I may mention, for instance, the coaling stations of the world, without which our Navy may sometime or other be overcome. I have ventured to say that much with respect to the question of economy, and I may carry it now a little further. You want to get into a new building; so do I. I do not suppose there is anyone who can speak more feelingly on the subject of being in unpleasant quarters than I; not that I complain personally so much, but on account of my surroundings. I think it a most unreasonable thing to expect to get a great amount of work out of people who are subject to bad ventilation, unpleasant rooms, and noises and surroundings which render the place unfit for study and reflection, where you cannot open the windows without letting in all the dust of Pall Mall. I think these are things that ought to be considered by the country, not, I am bound to say, by this Institution. Therefore, I feel as you do. I only know the War Office seems to me an admirable place for the study of finding your way under difficulties; it is a place with an intricacy of passages which I should think would be study for a military man, almost as much as a difficult country in which he was for the first time put down. But, however that may be, I am afraid you will never get a building before we do. Therefore, you should use all your efforts to persuade the country to build a War Office first, because I am sure you will never get out of the building in which you are at present before that is done. Gentlemen, I will be as good as my word. I thank you very heartily for the

kindness with which you have received me. I am very sorry that on a former occasion I was called away by a Cabinet Council; I was very much afraid I should have been to-day; but I showed at least the will to come and get the benefit of what had passed in your Institution, and that I had a deep sense of the advantages it confers on the country. As far as I am concerned, I think you are in bad quarters, and you have rightly not come to me on the subject, but have gone to the Treasury, for depend upon it at the bottom of every improvement in the country is the Treasury, whether that improvement be carried out or not.

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MEMORIAL from the PRESIDENT, VICE-PRESIDENTS and COUNCIL of
the ROYAL UNITED SERVICE INSTITUTION to the Right Honourable
the EARL OF BEACONSFIELD, First Lord of Her Majesty's Treasury.

1. Your Memorialists having understood that application is being made to the Treasury for the appropriation of a portion of Crown land in this immediate neighbourhood for the purpose of building Museums for India and for the Colonies, desire to lay before your Lordship the claims which they consider that this important National Institution has on Her Majesty's Government for favourable consideration when any appropriation may take place; they therefore beg to submit a statement of the history of the Institution, and of its present position.

2. The Institution was established in the year 1831, under the immediate patronage of His late Majesty King William the Fourth, and although then a mere museum, with a small library, a building rent-free was granted by His Majesty's Government. In order to adapt this building, and that subsequently acquired from the Crown at a ground-rent of £205 10s., a sum of upwards of £10,000 has been expended from the funds of the Institution.

3. The Institution having become in every respect well suited to the advancement of professional knowledge, and the importance of a higher education of Officers having been fully recognized, it may fairly claim a liberal consideration from the Government. It contains a Professional Library of over 17,000 vols., universally acknowledged as the best of its kind; a well-arranged Map and Chart Room; a valuable Collection of Models (some of them of great size), of Arms, and of other Professional Objects. There is also a Lecture Theatre, in use since 1850; all of these afford excellent means for study, and for instruction in Naval and Military subjects.

4. In the Lecture Theatre, papers of great importance to the Army, the Navy, and to the Reserve Forces are read and discussed, and are then published in the Journal, which is not only greatly appreciated by Officers at home and abroad, but holds a high position in the public estimation; and the general information supplied by the Institution has been of great use to Her Majesty's Service, the advantages afforded, proving it to be an important centre of Naval and Military instruction.

5. Secretaries of State for War, First Lords of the Admiralty, and other Members of successive Governments, have borne ample testimony to the merits of the Institution, as given in the Appendix.

6. Encouraged by the favourable opinions thus expressed, your Memorialists venture to request a continued consideration of the claims which the Institution has on the Government, for the allotment of a permanent site, inasmuch as the present tenancy is liable to be terminated at a quarter's notice.

7. The course which your Memorialists hope may be adopted, and the one which they deem best calculated to secure to the Services and to the Nation the benefits now afforded by the Institution, would be to appropriate to it either the site on which it now stands, or one in its immediate neighbourhood; the first proposal would allow the present premises to be gradually reconstructed, and the building to be brought into harmony with any improvements which may be carried out in this locality.

Your Memorialists trust that this Memorial may receive your Lordship's most favourable consideration.

(Signed) GEORGE, *President*.

ROYAL UNITED SERVICE INSTITUTION,
WHITEHALL YARD,
20th January, 1877.

APPENDIX.

EXTRACTS FROM THE SPEECHES MADE BY THE CHAIRMEN AT THE ANNUAL GENERAL MEETINGS, FROM 1860-76.

3rd March, 1860.

The Right Honourable EARL DE GREY AND RIPON, Under Secretary of State
for War:—

"I assure you I entertain the very highest appreciation of the value of the services rendered by this Institution, especially of late years, to the United Services of the Army and Navy."

2nd March, 1861.

His Grace the DUKE OF SOMERSET, First Lord of the Admiralty:—

"I may say it is of the greatest value to have an Institution of this kind, where lectures on Naval and Military Science are given, because a great deal of information might otherwise be lost."

1st March, 1862.

The Right Honourable SIR GEORGE CORNEWALL LEWIS, Bart., M.P., Secretary
of State for War:—

"I have great gratification in saying that the benefits of the relations between this Institution and the Government have not been one-sided; but that the Government, on a late occasion, received assistance from this Society, by some information with respect to a port in North America at a time when we contemplated the unhappy event of a rupture with the United States. . . . We feel the advantage which we derived from having access to the well-stored special library of this Institution, furnishing us with information of which the Government may at a moment of emergency not be in possession."

14th March, 1863.

Admiral the Honourable SIR FREDERICK W. GREY, K.C.B., Lord of the
Admiralty:—

"I quite agree with the remarks of gentlemen who have preceded me, that it is to the *lectures and discussions* that most importance should be attached. I think that the want of some arena in which professional questions can be calmly and dispassionately discussed is most strongly felt, particularly since the commencement of the present session of Parliament.

"The different members of the Government and the heads of the Departments who are engaged in carrying out these important improvements which the advances of science render necessary, must have acquired a great deal of information upon that occasion." (Discussion on the question of Rifled Ordnance.)

5th March, 1864.

General the Honourable SIR EDWARD CUST, K.C.H.

"I allude, not only to the facility this Institution gives to the younger members of the profession to acquaint themselves with the progress in naval and military science, but more especially to the valuable information which it affords to those entrusted with the administration of the Army and Navy, information which they could not otherwise obtain."

4th March, 1865.

His Grace the DUKE OF SOMERSET, K.G., First Lord of the Admiralty.

"I can assure you that in acting with the Secretary of War in the application to the Treasury, for a joint grant to this Institution, I did nothing more than what I considered my duty as First Lord of the Admiralty.

"If you look to the present position of the Institution, and to what it has done during the last three or four years, and see the attention which it has drawn to matters of science connected with the Army and Navy, you will see the great and growing value of this Institution. It was in that view that I recommended to the Treasury that the Admiralty and the War Office should combine to make this grant of £600 out of the Estimates."

2nd March, 1867.

The Right Honourable Sir JOHN SOMERSET PAKINGTON, Bart., G.C.B., First Lord of the Admiralty.

"The extraordinary circumstances which have marked the progress of everything connected with the Science of War during the last few years, certainly do tend to give a new and completely additional value to an Institution like this. Whatever it may have been at first, it is impossible to reflect upon these subjects to which I am now in these words referring, without feeling that such an Institution is calculated to promote national objects of the very first importance. I sincerely think that an Institution of this character is entitled, beyond all question, to the warmest and most sincere encouragement of the Government. I think the Government of this country is bound gratefully to acknowledge the services of such an Institution as this, and to give it every due and proper encouragement.

"And if its objects could not be satisfactorily carried out without an increase of assistance from the public funds, I am quite willing to express my opinion that that assistance ought to be given."

7th March, 1868.

Major-General the Right Honourable SIR H. K. STOKES, G.C.B., G.C.M.G., Controller-in-Chief.

"I wish to express publicly the great interest which I take in the prosperity and usefulness of this great Institution. Having been a great deal abroad, and having been somewhat in communication with foreign armies, I can confirm all that has been said by the honourable and gallant gentleman who seconded the first resolution as to the high estimation in which the Journal of the Proceedings of this Institution is regarded by Officers of those armies. Articles are translated and constant reference is made to them. . . . I can only repeat, which I do most sincerely, that it will be my endeavour, at all times and under all circumstances, to assist to the best of my ability the interest of this great Institution."

6th March, 1869.

The Right Honourable H. CULLING-EARDLEY CHILDERS, M.P., First Lord of the Admiralty:—

"The connection between the Government and an Institution of this kind ought to be of the most friendly, and, I may say, of the most cordial character, and so far as it in me lies in any way to promote that object, you may on all occasions be quite certain of my best endeavours to do so. Gentlemen, I look upon this Institution, if I may be allowed to say so, as a sort of neutral ground of professional enquiry, connected with the two services. We have political enquiries in the two Houses of Parliament, and we have departmental enquiries at the War Office and Admiralty; and you all know that those enquiries and researches cannot be altogether dissociated from questions of pure politics or questions of administration. . . . No one who has had an opportunity, as I have, of perusing the most valuable papers that have been read here, which bear directly upon questions dealt with in Parliament and in the departments, can fail to be greatly benefited, and I believe what is done here influences in a very remarkable degree many things which are done elsewhere."

5th March, 1870.

The Right Honourable EDWARD CARDWELL, M.P., Secretary of State for War.

"I feel extremely the importance of this Institution, and am very much impressed with the feeling which has been expressed in some speeches, viz.:—that the Government derives the greatest advantage from the labours of those gentlemen who contribute to the literature of this Institution. We live in a time when pure science, and applied science, and historical investigation, contribute probably more than at any former period, to the real progress of the military profession. Many of the most interesting subjects which afterwards occupy practical attention find the first germs of their existence in the lectures of this Institution. . . . I do not know that I ought to condole with you on the prospect of being disturbed in your premises, because I sincerely hope that, if, in consequence of any improvements that may take place in this neighbourhood, you are disturbed, the result may be that I may have the pleasure of seeing you in a more commodious place, and one in which your abundant treasures may be properly exhibited."

4th March, 1871.

The Right Honourable the VISCOUNT HALIFAX, G.C.B., Lord Privy Seal.

"I have had a good deal to do during a rather active life, so that I have not had time to pay much attention to the concerns of this Institution. But since Captain Burgess was good enough to wait upon me to ask me to take the Chair on the present occasion, I have looked through a number of papers which he left with me, and I must say that reading over those papers has impressed me with the very highest opinion of the valuable nature of this Institution. My belief is that the information which is collected here, and the results of the collision of opinion which takes place in the discussions in this room, will be of the greatest possible utility to both the Naval and Military Departments of the Government. We are living in a period of constant and rapid transitions. Thirty-five years ago I first became connected with the Admiralty. Nothing in the world exists there now which existed in those days. In thirty-five years everything has changed, from the truck to the keel, I was going to say; and it is almost impossible for any one, two, or three men to keep up with the rapidity of these changes. I see, in looking over the papers which have been discussed, that a great number of valuable suggestions have been made by various members, and discussed with great ability, and the result of those discussions cannot but be most useful to those who have to administer the Naval and Military affairs of this country. The Navy is the department with which I was first connected, and I still continue to take a deep interest in its affairs. I am sure that many of the questions which are discussed now, and which must be discussed for many years to come in this Institution, will be treated with the greatest consideration by the Government. The same remark will apply to the Army, because the state of transition there is in many respects quite as rapid as in the Navy. Since I have known the Army, it has been supplied with four or five different weapons, to say nothing of the field guns. Questions relating to the Army have been submitted to the experience of Members of this Institution, and the result of that experience has been brought to a focus within these walls; and I cannot but think that in that respect this Institution is of the greatest possible service to those who have to administer the military resources of the country. Well, in this state of things, gentlemen are likely to be called upon in one part or another of the country to take part in home defence; and we must come to learn from professional officers those duties which we cannot have the opportunity of learning at home, and which we may learn here with great advantage. I am glad to see that a personal friend of mine gave a very able lecture on the subject of 'Military Organisation' a short time ago. Although we cannot boast the experience of professional officers, I am glad to see that a country gentleman has read a paper here on a subject of great interest. I think those who are called upon to bear arms in defence of their country will learn a great deal from the lectures that are given here. I am glad to find from the Report, that you have an increased number of Members, increased efficiency in

various ways, in additions made to the Library, and in other means of obtaining and improving information. I do trust, though there is not much chance of your being disturbed this year, that before long you will be put, not into a more convenient site—for this is a very convenient site—but at any rate into a site at least as convenient, and from which you are not likely to be disturbed."

2nd March, 1872.

Field-Marshal His Royal Highness the DUKE OF CAMBRIDGE, K.G., &c., &c., &c.,
Commanding-in-Chief, President of the Institution :—

"Gentlemen,—After having had this Report read by the Secretary, I do not think there is much left for me to say with regard to the present position of the Institution. I am happy to congratulate you that, upon the present occasion, we meet under more favourable circumstances than when we last assembled in this theatre, viz., for the special purpose of considering what was to become of the Institution. One point was clearly brought out as the result of that meeting; namely, that the value of this Institution has been fully appreciated not only by the public, but especially by the Government, with which we are very essentially concerned, inasmuch as our tenure of this building, as you have already heard, depends mainly upon the course Her Majesty's Government may think it right to adopt. On that occasion I ventured to counsel you—and I am happy to say that that counsel was supported by everybody present—that we should accept the 'notice to quit' in anything but an unfriendly spirit; that we should make our opinions known; and that it should be made fully apparent how essential it was to the interests of the Institution that it should be continued on its present footing. One very important point should not be overlooked, viz., that it is essential than an Institution of this description should be situated in a locality accessible to every Member. This is a point of such importance, that I trust it will not be lost sight of in any arrangements which may hereafter be made. Meanwhile, thanks to the good feeling that has been evinced towards us, we have at least gained this great advantage, that instead of being called upon to leave on the 5th of April next, a year's grace has been given us, and the notice has been extended to the 5th of April, 1873. There is no doubt that that arrangement gives us a great advantage. It gives us time to consider what is best to be done; and it gives us the opportunity of intercommunication with the Government, and of seeing if our interests and their views cannot be brought in harmony. I do hope that, between the present date and the period proposed for our departure, some means will be found for letting us remain where we are, which certainly would be the most convenient and advantageous course for the Institution; particularly considering the amount of money which has been expended in enlarging and improving the premises; or, if we should fail in that, I trust that we shall meet with a site in immediate contiguity to the place in which we are now assembled. The advantage of the meetings which take place in this Institution for the reading of papers and for discussions has been generally acknowledged, not merely by the official world, but by those who take, or ought to take, an interest in the objects of the Institution. We have a proof of this in the Report which has just been read. You heard that an addition of ninety-one Members was made last year. I look upon that as a most interesting fact. It shows that there is a general interest in the subjects that are discussed here, as being of advantage to the two Services. It shows, too, that the exchange of thought and opinion which the discussions produce, is of the greatest value. I have no doubt, if we can only retain the present site, or secure one equally good, that the continued opportunity for the interchange of thought which takes place here on neutral ground, will be so extended, that, not only the two Services, but the Government itself, will derive the greatest possible advantage from it; because it is here that subjects of great importance can be freely and fairly discussed; they can be discussed on a very different basis from what they can be in an Office. Here everybody is allowed to express his opinions. It is very desirable that those opinions should be expressed with great moderation, great thought, and great good feeling. I am happy to say that that spirit has always pervaded our meetings. It does not at all follow, because two people do not think alike that they

should not be good friends. It would be the greatest possible mistake were it otherwise, particularly in discussing any merely professional question. There must be a variety of opinions; it is desirable that it should be so, and it is quite desirable that proper vent should be given to those differences of opinion. I used the words 'proper vent,' because there are two ways of expressing opinions. Here opportunity is given to express the thoughts which every man has a right to entertain, and, as I have said, the greatest good feeling and moderation prevail. But there is another way which is not quite so satisfactory, where thoughts are expressed sometimes even in an offensive manner. That course I greatly deprecate. That is not the system upon which our deliberations are conducted, and I trust it will never be permitted to find a place in them. I have a conviction of the vast importance, not only to the two Services, but to the public generally, of this Institution. Under these circumstances, I trust that, between this and next year, some arrangement may be made to secure, on even a more ~~firm~~ basis than hitherto, the Royal United Service Institution, which has now existed for a considerable time, and with great advantage, I think."

1st March, 1873.

The Most Honourable the MARQUIS OF LANSDOWNE, Under Secretary of State for War:—

"I esteem it a very great privilege to have been allowed by the Council of this Institution to take the Chair to-day. It has often occurred to me that one of the great advantages of public life—mine has been a very brief experience of such a life, but still it has convinced me of it none the less—is that it affords you opportunities of bringing yourself into contact with numbers of men, classes of men, associations of men, whom you would not otherwise have the privilege of meeting and knowing; and I can assure the members present here to-day, that there is no association whose acquaintance I am more pleased to make, than that of the Royal United Service Institution. I say this not only as one of the general public who watch with an eye of approval and interest the energetic endeavours of this Institution, but I say it also as having the honour of being connected with one of the Public Departments, which will, I hope, continue always to preserve with this Institution those amicable relations which I am convinced subsist between them. Added to this, I think I may congratulate myself upon having been allowed to occupy your Presidential Chair upon the occasion of certainly one of the most successful meetings—I mean not so much in point of attendance, but successful in point of the condition of things which the Report discloses—that has ever been held. We have not only a very large and rapid increase in the number of members of the Institution, but we have a very considerable financial increase as well; and I dwell with greater satisfaction upon this, because when I see the funded property of the Institution gradually increasing, it occurs to me that, should that unfortunate contingency which has been already referred to to-day ever overtake us, the Institution will find itself with funds of its own whereby to second the effort which I believe will be made by any Government—whatever party it may belong to—to secure for the Royal United Service Institution a firm basis for the future. A reference to pledges which have been already given by persons holding high official positions in the present Government, is certainly reassuring on this subject; and I am convinced that those pledges were not only readily given, but will be honourably redeemed when the day comes.

"Then, Gentlemen, having had the honour of filling the Chair to-day, I feel tempted to say a few words to you about your Institution itself, and I must confess that it is with some hesitation that I address myself to the task, because I run no inconsiderable risk of finding myself talking to you about a subject with regard to which you are very much better informed than I am. But there are one or two considerations that force themselves upon my mind, and those considerations I will, with your permission, very briefly state. We live in an age of great scientific progress. Inventions and discoveries succeed each other with remarkable rapidity, and for that reason increased scientific culture has become at once indispensable and more popular than it ever was before. We see that in every trade, in every pre-

fession, in every class of society; and I think this Institution may not unreasonably congratulate itself upon having for more than forty years taken the lead in that movement in the direction of scientific culture, which has added so much to the resources and strength of our country. . . . This Institution has facilities for promoting scientific culture which perhaps no other Institution in the world has, for this reason, that we have here a neutral territory between science on the one hand and professional and practical life upon the other. The merits of the one frame of mind dovetail with the merits of the other; each corrects the fault of the other; and I think you get a more practical use of science in an Institution like this, than perhaps you do under any other conceivable circumstances.

"I will not sit down without referring to the connection which has so long subsisted between the War Department and this Institution. I am happy to say that that connection is one on which both the War Department and the United Service Institution may reflect with pleasure. There has never been any approach to dependence between the two, but there has always been the utmost goodwill. We feel that we gain not only by the use made by Officers connected with the War Department of your valuable premises and of those facilities which you offer to them, but we feel that we gain in that wide diffusion of cultivated spirit which no Act of Parliament and no regulations can produce, but which the spontaneous efforts of this Institution have succeeded in very firmly establishing. My Lords and Gentlemen, I have only to thank you for having allowed me to occupy the Chair to-day, and to assure you it will be a great pleasure to me to look back upon my introduction to this Institution."

7th March, 1874.

Admiral Sir ALEXANDER MILNE, G.C.B., Lord of the Admiralty:—

"My Lords and Gentlemen, I beg to thank you for the honour you have done me in according me a vote of thanks. I can only say that I am exceedingly grateful to the Council for having done me the honour of asking me to preside on this occasion. I accepted that invitation with the greatest pleasure; because, though I have not been participating as an active Member of this Institution, yet it is one that I have for years advocated as one of the most useful and practical for both Services. I have read with great attention, and with much interest, the valuable Journals which are published here. They contain matters of public interest both for the Army and Navy, as well as for civil life, and I can certainly concur in all that has been said to-day about our being under a deep obligation to the authors of those Papers for the address which they have displayed, and for the ability with which they have written them. But the usefulness of this Establishment is not confined to the discussions which take place here. I agree in every word which the gallant General said with regard to free discussion. I think it is for the interest of our professions that those who come here should clearly and explicitly state their views in that straightforward manner which cannot be objectionable to any Government. Besides the privilege of the Lectures, Members of this Institution have access to what is perhaps the finest professional library in the country. It is a great credit to the Members of the Council, and to those who have passed years in the discharge of their duties here, that this Establishment has been raised to the position which it now holds, that it has the finest library in the country, that it receives from foreign nations their principal works, and that both the War Office and the Admiralty are ready to come forward to render such assistance as they can in the way of books and charts. There is another way in which this Institution exercises a widespread influence. I believe that the Papers published here have great influence in our respective professions. . . . I have pleasure in mentioning that, because the Essay (Junior Naval Professional Association), which is now printed, does him (Lieut. Noel, R.N.) great credit; and I also take the opportunity of referring to the subject as showing the influence that this Institution has over the professional Officers of the Navy, and I believe of the Army also. I have to return you thanks for the compliment paid to me, and to assure you that my desire and my anxiety have been to forward the interests of our respective professions, and also to do all I could for this Institution."

6th March, 1875.

The Right Hon. the EARL OF PEMBROKE, Under Secretary of State for War (in the absence of Mr. GATHORNE HARDY):—

"Before I say anything on the subject of the motion, I wish just to state that no one I am sure can be more disappointed at his absence to-day than Mr. Hardy himself. He was summoned away, as has been said already, at the last moment, and with great regret that he was not able to attend. I am not as well acquainted with this Institution as I hope to be in future; but it does not require a very deep insight into its working, or very great experience, to see the very great advantages which it possesses, and the enormous capabilities it has both for acquiring and diffusing information. I most thoroughly concur in all that has been said about the very great service which it has rendered and does render, and I hope always will render, to the Government. In saying this I wish to call particular attention to one point, viz., that of the Gold Medal. The amount of help that will be afforded to the Government by picking the best brains of the whole army upon such subjects as that which has been chosen for this year cannot, I think, be exaggerated."

4th March, 1876.

Admiral Sir ALEXANDER MILNE, G.C.B., Lord of the Admiralty:—

"Before the business of the meeting commences I think that I should state the reason why I have the honour of occupying the Chair on this occasion. It was the intention of the First Lord of the Admiralty to have been here this afternoon, but in consequence of a meeting of the Cabinet at 12 o'clock, he is unable to be present. The Council have been kind enough, therefore, to ask me to preside, and I shall be very glad if I can be of any service. . . . I am quite sure of this, the more young Officers write upon technical subjects, avoiding all questions of discipline, and not making use of confidential papers, the more it will be for the good of the Service itself, and also of the military profession. I trust you will allow me to add a few words with regard to the Institution itself. I think nobody can form any other opinion than that it has been of the greatest professional use both to the Army and Navy, and that there are matters discussed and papers written in this Institution by members of both Services which are exceedingly advantageous, and hold forth not only old but new views upon all these particular questions now arising in our respective professions. To whom are we indebted for all this? We are indebted to the Chairman, the Council, the Secretary, and the other professional Officers of the United Service Institution. These gentlemen are catering for the public good, and I think it is due to them that, as the Chairman of this meeting, I should express, as representing you, our satisfaction at the manner in which the Chairman and the Council have so kindly undertaken their duties, and have maintained and kept up this Institution. We have expressed, through a Resolution, a vote of thanks to those Members who are leaving the Council; but I think it is due to those who still remain that their services should not pass unnoticed. I conclude by expressing my own personal feeling that whatever I can do, or the Admiralty can do, to support this Institution or increase its usefulness, we shall be very glad to do."

NAMES OF MEMBERS

WHO JOINED THE INSTITUTION BETWEEN THE 4TH APRIL AND
THE 2ND MAY, 1876.

LIFE.

Ponsonby, J. G., Lieut. 49th Regiment.	Inverurie, Lord, Captain Royal Aber-
Cleveland, Henry F., Captain R.N.	deenshire Highland Militia.
Curzon-Howe, Hon. A. G., Lieutenant	Wood, Thomas, Lieut. Gren. Guards.
R.N.	Fife, James G., Colonel R.E.

ANNUAL.

Nettleship, W. F., Captain 9th Surrey	Carter, Robt. Brudenell, Esq., F.R.C.S.,
Rifle Volunteers.	late Staff Surgeon A.M.D.
Hume-Spry, G. F., M.D., Surgeon 2nd	Romilly, Frederick W., Lieut. Scots
Life Guards.	Fus. Guards.
George, O. W., M.D., Surgeon-Major	Pym, Francis, Lieut. 1st Life Guards.
1st Life Guards.	Murray, A. M., Lieut. R.A.
Clinton, Lord E. W. P., Major Rifle	Mildmay, H. P. St. J., Lieut. Gren. Gds.
Brigade.	Williams, C. G., Lieut. R.N.
Wegg-Prosser, J. F., Lieut. Rifle Brigade.	

WHO JOINED THE INSTITUTION BETWEEN THE 19TH JUNE AND
THE 31ST DECEMBER, 1876.

LIFE.

Robertson, Charles G., Lieut. Edin-	Newark, C. W. S., Viscount, Lieut.
burgh Militia.	Gren. Guards.
Birch, Lightwood T., The King's Own	Warry, A. W., Lieut. R.N.
1st Stafford Militia.	Branson, C. E. D., Captain H.M.I.M.F.
Noake, Maillard, Major New Zealand	Pole, Arthur C., Captain 13th Hussars.
Militia.	Loyd, Frank K., Lieut. 55th Regiment.
Corry, Alvin C., Lieut. R.N.	

ANNUAL.

- Fowler, C. J., Lieut.-Colonel R.E.
 Lindsay, Charles, Lieut. R.N.
 Chambers, Francis, Lieut.-Colonel 1st
 King's Own Stafford Militia.
 Madden, Geo. C., Lieut. 1st West India
 Regiment.
 Parker, R. J. H., Captain R.E.
 Smart, Geo. J., Major R.A.
 Foster, C. E., Captain 58th Regiment.
 Turnbull, C. F. A., Lieut. 32nd Regt.
 Johnston, D. A., Lieut. R.E.
 Greenhill, B. Cecil, Lieut. Kent Art.
 Militia.
 Weldon, F., Major Madras Staff Corps.
 White, W. L., Captain 4th E. York
 Artillery Volunteers.
 Elyard, James, Major 2nd Royal Surrey
 Militia.
 Coles, Chas. Horsman, Captain 1st
 Surrey Artillery Volunteers
 Stoddard, Thomas H., Major-General,
 Unatt.
 Cameron, V. Lovett, C.B., Com. R.N.
 Tompkins, John, Paymaster R.N.
 Rotton, Arthur, Lt.-Colonel, late R.A.
 Watson, A. J., Lieut. 12th Regiment.
 Main, Robert, Esq., Royal Naval College,
 Greenwich.
 Toulmin, Alfred H., late Lieut. 65th
 Regiment.
 Greg, Edward H., Captain, late 4th
 Royal Lancashire Militia.
- Murray, K. D., Captain 89th Regiment.
 Taaffe, C. R., Lieut. 16th Lancers.
 Chadwick, Edwd., Lieut. 16th Lancers.
 Davis, J. E., Captain R.N.
 Eden, M. R., Major, Unatt.
 Baumann, C. E., Lieut. 2nd West India
 Regiment.
 Messervy, G. T., Captain 21st Middlesex
 Rifle Volunteers.
 Norman, C. B., Captain Bengal Staff
 Corps.
 Hoste, Geo. H., Esq., Admiralty.
 Clarke, William, Captain, 2nd Middle-
 sex Militia.
 Boyce, E. J. G., Lieut. R.E.
 Bedford, F. G. D., Captain R.N.
 Shaw, William, Captain 2nd Stafford
 Militia.
 Forster, Charles, Captain, 2nd Stafford
 Militia.
 Hall, Geo. C., Lieut. 2nd Stafford Militia.
 Bagnall, T. N., Lieut. 2nd Stafford
 Militia.
 Heyland, J. R. K. L., Lieut. R.A.
 Hamilton, R. V., C.B., Captain R.N.
 Ballantyne, J. G., Captain 11th Regt.
 James, F. W., Lieut. 9th Regiment.
 Druitt, Percy S., Lieut. 101st Regiment.
 Wyndham, W. G. C., Lieut. 21st Hussars.
 Graham, D. A. G. C., Captain 16th
 Lancers.

ADDITIONS TO THE LIBRARY AND MUSEUM DURING 1876.

LIBRARY.

*Where London is the place of Publication, the word London is omitted.
Where no size of Volume is mentioned, the Work is in 8vo.
Where no date is mentioned, 1876 is the year of publication.*

BOOKS PRESENTED.

- ALBEMARLE, The Earl of, General. Fifty Years of my Life. 2 vols. *The Author.*
- BARLOW, H. C., M.D. Critical, Historical and Philosophical Contributions to the Study of the Divina Commedia. 1864. *The Author.*
- BATTALION Re-organization. By a Field Officer. Pamph.
- CANADA. Report, Canada Militia. 1875. Ottawa. *Isaac Brock Stanton, Esq.*
- CHINA. Translation of the Peking Gazette. 1874-75. 2 vols. *Capt. Alex. Man.*
- DE MARTENS. An Essay on Privateers, Captures and particularly on Recaptures. Also a Discourse on the Rights and Duties of Neutral Powers. Translated by T. H. Home. 1801.
- DULAGUE. Leçons de Navigation. Rouen, 1791. *Gen. Sir Wm. Codrington, G.C.B.*
- DUFFLA. Medical History of the Expedition. Fol. 1875. *D. T. Gen. J. T. C. Ross, F.R.C.S.*
- Ditto Hills. Account of Part of the. Fol. Calcutta, 1875. *Anon.*
- DE FONBLANQUE, E. B. Political and Military Episodes in the latter half of the 18th Century, derived from the Life and Correspondence of the Right Hon. John Burgoyne, General, Statesman, and Dramatist. *The Author.*
- DILLON, The Hon. Arthur. A Winter in Iceland and Lapland. 2 vols. 1875. *The Author.*
- DALTON, J. C., Lt. R.H.A. Questions and Answers for the Use of Non-commissioned Officers and Gunners of Batteries of Horse and Field Artillery armed with the 9 P.R. and Rifled Gun of 6 cwt. Cork. *The Author.*
- DENMARK. Four Sheets Topographical Atlas. *The Danish War Minister.*
- EXAMINATIONS. Report, Final Examination, Staff College, Dec. 1875. Ditto. Report on the Final Examination to the Staff College, Dec. 1876. With Copies of the Examination Papers. *The Director-General of Military Education.*
- FRASER, T., Capt. R.E. The Defence of a Position Selected as a Field of Battle. Royal Engineer Prize Essay for 1875. *The Writer.*
- FAWCUS, G. Small Pocket Field Drawing Board. *The Designer.*
- FRANCO-German War. 1st Part, 8th and 9th Sections; 2nd Part, 10th Section. *The Secretary of State for War.*
- GERMAN EMPIRE. The Armed Strength of. Part I., Organisation and Administration, with Map. By Capt. F. C. H. Clarke, R.A. *The Secretary of State for War.*
- GOLDSMID, Sir F., Gen. Eastern Persia. 2 vols. *The Author.*
- GUY, Dr. F., R.S. The Crimean War, or the Turks avenged. Pamph. *The Author.*
- HALL, Sir William H., Admiral, K.C.B. Our National Defence. Pamph. *The Author.*
- HARCUS, W. South Australia; its History, Resources and Productions. *F. S. Dutton, Esq., C.M.G.*
- HOGG, Jabez. Impairment or Loss of Vision from spinal shock or concussion. *The Author.*
- HOUSE, E. H. The Japanese Expedition to Formosa. 1875. *Capt. Alex. Man.*
- INGLIS, Col. R. E. Notes of Lectures on Iron Fortification. 1875. *The Commandant S.M.E. Chatham.*
- ITALY. The Armed Strength of. Translated from the German by Lt. W. A. H. Hare, R.E. *The Secretary of State for War.*

XXVIII PROCEEDINGS OF THE FORTY-SIXTH ANNIVERSARY MEETING.

- ITALY. Der Krieg in Italien, 1859.
Zweiter Band. Wien.
The Austrian War Minister.
- MONTEIRO, J. J. Angola and the River Congo. 2 vols. 1875.
The Publishers.
- MOUNTED RIFLES. Report of Annual Meeting of 1st Hants Mounted Rifles. 13th May, 1876. *Col. Bower.*
- NAVY. Admiralty Regulations, 1790-1826 and 1844.
Gen. Sir Wm. Codrington, G.C.B.
- NAVY:—
Naval Instructions. 1806.
Extract from Marine Treatise. 1758.
Duties of a Deputy Judge-Advocate. 1805.
Essay on Naval Tactics. 1790.
Naval Force of Great Britain. 1791.
Le petit Neptune Francais. 1793.
Pilot Ayroura.
Memoirs of the Royal Navy, Druck's. 1806.
Naval Courts Martial, M'Arthur's. 1792.
Ship Master's Assistant. 1792.
Mathematical Tables, Sherwin's. 1771.
Thompson on the Scurvy. 1790.
The Seaman's New Vade Mecum. 1787.
Le petit Flambeau de la Mer.
Recueil des principaux Plans des Ports et Rades de la Mer Mediterranée.
Account of the Proceedings of the Squadron effecting the escape of the Royal Family of Portugal.
Mrs. Brownlow Knox.
- NETHERLANDS. 7th vol. Military Reports.
The War Minister, The Netherlands.
Ditto. The Armed Strength of. By Capt. F. C. H. Clarke, R.A. With Map. *The Secretary of State for War.*
- PANORAMA, Military, or Officer's Companion. 3 vols. for 1813-14-15.
General Sir Edward Hodge, K.C.B.
- PRICE, Capt. R.N., M.P. Navigation of Her Majesty's Ships. Pamph.
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RO

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 *Acland
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 Mil. (
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 *Adams
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 *Addisc
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 Middl
 Ailsa, M
 Ainslie,
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 Akers, C
 Albemarle
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 Fus. (
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 *Alexand
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 Alexand
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 Alington
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 Boulderson, S. S. Col. Ben. S. Corps (11.)
 Bourchier, Claude T., *W.C.* Colonel late
 Rifle Brigade, *ADC. to the Queen*.
 Bousfield, Henry Surg. (ret.) Beng. Army
 Bouverie, H. H. P. Lieut. W. Somerset
 Yeo. (11.)
 Bowden, H. G. Major (ret.) 22nd Regt. (11.)
 Bowdich, E. H. S. M.-Gen. Bomb. Army
 (11.)
 Bower, G. J. Lieut. R.N. (11.)
 Bower, J. Lt.-Col. Hants Mounted R.V. (11.)
 Bowers, Henry Dep. Com.-General
 Bowles, A. M. Lieut. 95th Regt. (11.)
 Bowles, H. C. Lieut. Rifle Brigade (11.)
 Bowles, R. F. Capt. late R. Berks Mil. (11.)
 Bowly, J. D. Capt. R.E. (11.)
 Bowmen, H. S. Major (ret.) 35th Regt.
 Bowyer, E. A. Capt. late 1st W. I. Regt.
 Boxer, C. R. F. Capt. R.N. (11.)
 Boxer, E. M. Major-Gen. (ret.) R. A. (11.)
 Boyce, E. J. G. Lieut. R.E. (11.)
 Boycott, Wm. Major late 29th Regt. (11.)
 Boyd, Jas. P. Capt. late Roy. Can. R. (11.)
 Boyle, Alex. Rear-Adm. (11.)
 Boyle, E. R. Capt. (ret.) Cold. Gds. (11.)
 Boyle, Gerald E. Lieut. Rifle Brig. (11.)
 Boyle, Patrick D. Capt. Gr. Gds. (11.)
 Boyle, R. H. Capt. R.N. (11.)
 Boyle, Hon. W. G. Lt.-Col. 2nd Somerset
 Militia, late Lt.-Col. Cold. Gds.
 Boys, Chas. V., Esq. late 7th Surrey, R.V.
 (11.)

- Butler, Henry Admiralty (11.)
 Butler, J. B. Capt. R.N. (11.)
 Butler, Vere A. Lt. late R.M. L.I. (11.)
 Butt, T. Broomhead. Col. (ret.) 86th (11.)
 Buttanshaw, W. H. Capt. Paym. 16th Lancers (11.)
 Byham, W. R. late War Office (11.)
 Byng, A. M. Lt.-Col. (ret.) Gren. Gds. (11.)
 Byng, Hon. C. C. G. Capt. 1st Life Gds. (11.)
 Byng, Hon. H. W. J. Maj. Wilts Yeo. late Lt.-Col. Colds. Gds.
 Byng, Geo. P. F. Capt. 105th Reg. (11.)
 Byng, T. R. Capt. Mad. S. C. (11.)
 Byrne, T. E. Lieut.-Col. R.A. (11.)
 Byrne, Tyrell M. Lt.-Col. late 1st Royals
- CADELL, A. T. Col. R. H. A. (11.)
 Cadell, R., CB. Colonel R.A. (11.)
 Cadell, Thos., *W. C.* Major Beng. S. C. (11.)
 Cadogan, Hon. Sir Geo., KCB. Lt.-Gen. (11.)
 *Cafe, Haydon L. Lt.-Col. late 94th Regt. (11.)
 Caffin, Sir James C., KCB. Vice-Adm. (11.)
 Caldbeck, Wm. Lt. late Limerick Mil. (11.)
 Calderon, C. M. Capt. 60th R. Rifles (11.)
 Caldicott, R. Maj. 1st Warwick R. V. (11.)
 Caldwell, W. B. Lt.-Col. late 76th Regt. (11.)
 Calthorpe, Hon. Somerset J. G. Col. (ret.) 5th Dr. Gds.
 Cameron, Aylmer S., *W. C.* Maj. 25th Regt. (11.)
 Cameron, Sir D. A., GCB. Gen. Col. 42nd Royal Highlanders (11.)
 Cameron, J., CB. Maj.-Gen. R.E. (11.)
 Cameron V. Lovett, CB. Comr. R.N. (11.)
 *Cameron, W. Gordon, CB. Col. 4th Regt. (11.)
 Campbell, Arch. C. Capt. Lanark Yeo. late Lieut.-Col. So. Fus. Gds. (11.)
 Campbell, A. H. Lt.-Col. late B. S. C. (11.)
 Campbell, Duncan Lieut.-Col.
 Campbell, F. Lorn Capt. S. F. Gds. (11.)
 Campbell, George, CB. Gen. R.A. (11.)
 Campbell, Sir Geo., *Bart.* Capt. late 1st Drs.
 Campbell, G. H. F. Col. late Gren. Gds.
 Campbell, Hon. H. W. Lt.-Col. late Cold. Gds.
 Campbell-Johnston, A. R., late Governor Hong Kong (11.)
 *Campbell, John R. Maj. Hants Art. Mil. (11.)
 Campbell, P. John Col. R.H.A.
 Campbell, Hon. R. G. E. Capt. Cold. Gds. (11.)
 Campbell, W. Col. late 100th Regt.
 Campbell, W. F., Lord Maj. 46th Mid. R.V. (11.)
 Campbell, W. M. Capt. R.E. (11.)
 Campbell, Walter S. late Lieut. Rifle Brig. (11.)
 Campbell, W. M. T. Major R.E. (11.)
 Campbell, W. P. Lt. 60th Rl. Rifles (11.)
 Cannon, R. Lieut.-Gen. (11.)
 Carden, G. Lt.-Col. 5th Fus. (11.)
 Carden, F. W. Lieut.-Col. (11.)
 Cardew, Fred. Capt. 82nd Regt. (11.)
 Cardwell, Reginald Capt. 1st Lanc. Mil. (11.)
 Carey, Constantine P. Major R.E. (11.)
 Carey, T. A. Lt.-Col. Beng. Staff Corps (11.)
 Carfrae, C. W. Lieut. 78th Highl. (11.)
 Cargill, Sidney Capt. 55th Regt. (11.)
 Carrington, Hon. W. H. P. Lt.-Col. Gr. Gds. MP. (11.)
- *Carmichael, L. M. Capt. 5th R.I. Lan. (11.)
 Carpenter, F. S. late Dep. Controller
 Carpenter, G. W. W. Major (11.)
 Carr, Fredk. S. Capt. 5th Punjab Cav. (11.)
 Carrick, S. A. EARL of Capt. late Gr. Gds.
 Carrington, Chas. W. Major R.M.L.I. (11.)
 Carrington, Fred. Lieut. 24th Reg. (11.)
 Carson, Jas. S. Capt. Rl. Bucks Mil. (11.)
 Carter, H. Bonham. Lt.-Col. late Cold. Gds. (11.)
 Carter, Jno. M. Lieut.-Col. late Adj. Roy. Monmouthshire Militia
 Carter, Robt. Brudenell, FRCS. late Staff Surgeon, A.M.D. (11.)
 Cartwright, H. Col. late Gr. Gds. MP. (21.)
 Case, John Navy Agent (11.)
 Cass, A. H. Lieut.-Col. 10th Huss. (11.)
 Casson, B. T. Capt. 5th W. York Mil. (11.)
 Castle, W. McCoy Fitzgerald Lieut. R.N. (11.)
 *Caulfield, J. A. Major Royal Tyrone Fus. late Capt. Cold. Gds.
 Cautley, George Major-Gen. (unatt.) (11.)
 Cautley, Henry Capt. R.E. (11.)
 Cavaye, C. W. Lieut. 24th Reg. (11.)
 Cavenagh, Orfeur Lieut.-Gen. (11.)
 Cavenagh, Gordon M.-Gen. Beng. S. C. (11.)
 Cavendish, Hon. C. C. W. Lt. 10th Hus. (11.)
 Cavendish, Jas. Chas. Capt. (ret.) R.A. (11.)
 *Cavendish, W. H. F. Lieut.-Col. Commt. 2nd Derby Rifles, late 52nd L.I. (11.)
 Cawkwell, W. Lieut.-Col. Eng. Railway Vol. Staff Corps (11.)
 Cawston, Geo. late Lt. 1st Mid. Art. Vols. (11.)
 Cecil, Eustace, LORD Lt.-Col. MP. (11.)
 Chads, Henry Vice-Adm. (11.)
 Chadwick, Edw. Lieut. 16th Lancers (11.)
 *Chalmer, R. Capt. 60th Rifles (11.)
 Chambers, A. W. Major 26th Mid. R. V. (11.)
 Chambers, Edw. Lt. London Art. Vols. (11.)
 Chambers, Francis Col. 1st King's Own Stafford Mil. (11.)
 Chamberlaine, T. J. Lieut. 80th Regt. (11.)
 *Champion, P. R. Lieut. R.M.L.I. (11.)
 Channer, A. W. Capt. 3rd Middx. Militia, late Lt. 21st R. N. B. Fus. (11.)
 Chaplin, Edw. Lt.-Col. late Cold. Gds. MP. (11.)
 *Chapman, A. T. L. Maj. 34th Regt. (11.)
 Chapman, J. F. Capt. 7th Dr. Gds. (11.)
 Chapman, Sir F. E., KCB. Maj.-Gen. R.E. (11.)
 *Chapman, W. E. Capt. (h.p.) 1st Dr. Gds. (11.)
 Chapman, W. H. Maj. late Leicester Mil. (11.)
 Charleton, T. H. Capt. late 69th Regt.
 Charley, John Capt. 60th R. Rifles (11.)
 Chatto, W. J. P. late Ens. 23rd M. R. V. (11.)
 Chawner, Harry Lt. Georgetown Mil. (11.)
 *Chermside, H. L., CB. Col. R.A. (11.)
 Cherry, Apsley Major 90th Regt. (11.)
 Chester, C. M. Maj. late R. Sussex Art.
 Chetwynd, Hon. C. C. Capt. (ret.) 10th Reg. (11.)
 Chichester, Francis S. Lt. late 22nd Regt. (11.)
 Chichester, H. A. Capt. 25th Regt. (11.)
 Childers, E. W. Lieut.-Col. R.A. (11.)
 Childers, J. W. Dep.-Lt. Yorkshire
 Chinn, Edw. Capt. late 12th Regt. (11.)
 Chisholm, A. B. Capt. late 25th (11.)
 Cholmeley, H. J. Capt. 16th Regt. (11.)

Cholmondeley, MARQUESS of	Codrington, <i>Sir H. J.</i> , KCB.	Admiral of the Fleet. (11.)
Christian, H. R. H. PRINCE F. C. A. of Schleswig-Holstein, KG. Lt.-Gen. (11.)	Codrington, <i>Sir W. J.</i> , GCB.	Gen. Col. Cold. Gds. (21.)
Christie, Fred. Gordon	Codrington, W. Wyndham Lt. late 17th Lane.	
Chrystie, W.	Coe, E. O. Lt. late Edmonton R. Rifles (11.)	
Churchill, C. H. S. Lt.-Col. (ret.) 60th Rifles	Cohen, Lionel B.	Capt. Tower Hamlets Engr. Vols. (11.)
Churchill, LORD Edw. Spencer	Coke, <i>Hon. E. K. W.</i>	Capt. late Cold. Gds.
*Clanchy, Henry T.	Coke, Thos. W. VISCOUNT	Capt. Scots Fus. Gds. (11.)
Clark, A.	Coker, Augustus H.	Lieut. R.N. (11.)
Clarke, <i>Sir Andrew</i> , KCB.	Coker, E. Rogers	Capt. 106th Reg. (11.)
Clarke, C. Harwood	Cole, J. A.	Maj.-Gen.
(11.)	Coleman, W. F. G.	Capt. late R. Drag. (11.)
Clarke, C. M.	Coles, Alfred	Lt.-Col. 1st Sur. R. V. (11.)
Clarke, J. G.	Coles, Chas. H.	Capt. 1st Surrey Art. Vols. (11.)
Clarke, J. H. Courtney	*Collen, E. H. H.	Capt. Bengal Staff Corps
Clarke, P. P. D.	Colleton, <i>Sir R. A. W.</i> , Bt.	Lt. 23rd Regt. (11.)
Clarke, S. C.	*Colley, G. P., CB.	Col. 2nd Queen's (11.)
Clarke, Stanley de A. C.	Collings, G. M.	Capt. R.E. (11.)
Clarke, T. S.	Collins, Caleb	Lieut. 51st Regt. (11.)
Clarke, W. A.	Collins, F. MD.	Surg.-Maj. A.M.D. (11.)
Clarke, William	Collins, Wm. Louis	Capt. 1st Exeter R.V. (11.)
Clarke, William	Collinson, <i>Sir Richard</i> , KCB.	Adm. (11.)
Clay, Wm. Lt.-Col. 8th Lan. Art. Vols. (11.)	*Collinson, T. B.	Maj.-Gen. R.E. (11.)
Clayton, Emilius	Collyer, G. C.	Col late R.E. (11.)
Clayton, F. A. T. Lt.-Col. (ret.) Gr. Gds. (11.)	Colman, G. B. T.	Lt.-Col.
Clayton, Fran. S.	*Colomb, J. R. C.	Capt. late R.M.A. (11.)
Clayton, J. W. Capt. late 13th Lt. Drs. (11.)	Colomb, P. H.	Capt. R.N. (11.)
Clayton, Thomas	Colquhoun, J. A. S.	Capt. R.A. (11.)
Clayton, V. G.	Colthurst, James N.	Major 6th Regt. (11.)
Clayton, W. L. Nicholl	*Colville, Charles F.	Capt. 11th Regt. (11.)
Art. Mil. (11.)	Colville, Henry E.	Capt. Gren. Gds. (11.)
Cleland, Wm. Capt. 102nd R. Mad. Fus. (11.)	Colvill, Hugh G.	Capt. late 29th Regt. (11.)
Clements, <i>Hon. C. S.</i>	Colville, <i>Hon. W. J.</i>	Co. late R. Brig. (11.)
Clements, F. W. R.	Colvin, W. B.	Major 7th Roy. Fus. (11.)
Clerk, H.	*Comber, H. W.	Capt. R.N.
Clerk, John	Combermere, Wellington H. S.	VISCOUNT Col. (11.)
Clery, C. F.	Commerell, <i>Sir J. E.</i> , <i>W. C.</i> KCB.	Rear-Adml. (11.)
Clifford, R. S. C.	Comerford, Jas. W.	Capt. 22nd Mid. R.V. (11.)
Clinton, LORD E. W. P.	Compton, A. F.	Lieut. Gren. Gds. (11.)
(11.)	Coney, Bicknell	Major late 17th Lancers
Clitherow, E. J. Stracey.	Conolly, Arthur	Capt. Bengal S. Corps (11.)
S. F. Gds. (11.)	Conolly, Jas., CB	Maj.-Gen.
Clive, E. H.	Conolly, J. A., <i>W. C.</i>	Lieut.-Col. (ret.) Coldm. Gds. (11.)
Cloete, <i>Sir A. Josias</i> , KCB.	Conway, T. S., CB.	Maj.-Gen. (11.)
19th Regt. (11.)	Cook, Henry	Lieut.-Col. 100th Regt. (11.)
Clonmell, J. H. R. EARL of	Cooke, A. C., CB.	Col. R.E. (11.)
Yeo. Lieut. (ret.) 1st Life Gds.	Cooke, T. C.	Capt. R.A. (11.)
Close, Frederick	Cookesley, E. M.	Capt. late 22nd Regt. (11.)
Clothier Robt. F.	Cooper, Edw. H.	Lt.-Col. (ret.) Gren. Gds. (11.)
(11.)	MP.	
Clowes, G. G.	Cooper, Harry	Lieut. 47th Regt. (11.)
Clutton, Owen	Cooper, Wm.	Col. late 19th Regt. (11.)
Cochran, Francis	Cooper, W. Cooper	Maj. late Bedford Mil. (11.)
Cochrane, H. S., <i>W. C.</i>	Cooper, Wm.	Lt. late 4th Midx. R.V. (11.)
Cochrane, W. M.	Cope, Edw.	Lieut. Robin Hood R.V. (11.)
Colburn, Alex.	Cope Richd.	Capt. late 7th R. Lancashire Mil. (11.)
Cockburn, C. V.	Cope, <i>Sir W. H.</i> , <i>Bart.</i>	Lieut. late Rifle Brig. (11.)
*Cockburn, James G.	Copeman, C. R.	Capt. 1s Lanc. R. V. (11.)
*Cockle, G. M. A.		
Cocks, Chas. Lygon		
Lt.-Col. late Cold. Gds. (11.)		
Cocks, O. Y.		
Maj. (ret.) 4th Regt. (11.)		
Codd, Edward		
Vice-Adm.		
Codrington Alfred E.		
Lieut. Cold. Gds. (11.)		

- Coppinger, T. S. Lieut. 11th Regt. (11.)
 Corballis, James A. Capt. 103rd Regt. (11.)
 Corbett, W. A. Capt. late 62nd Regt. (11.)
 Corkran, C. S. Lt.-Col. Gren. Gds. (11. 1s.)
 Cornish, Chas. O. Capt. 73rd Regt. (11.)
 Cory, Arthur Col. Bengal S. Corps (11.)
 Corry, Hon. Hen. W. L. Capt. Cold. Gds. (11.)
 Corscaden, John F. Capt. late Queen's West. R.V. (11.)
 Gosby, T. P. Major 14th Regt. Surgeon R.N. (11.)
 Costello, T. M. Surgeon R.N. (11.)
 Costin, C. Capt. late 14th Regt. (11.)
 Cotes, Charles James Capt. Gren. Gds.
 Cotton, A. McClintock Lieut.-Col. 20th Hussars (11.)
 Cotton, Corbet Lt.-Gen.
 Cotton, Thos. F. Staff Surgeon (h.p.)
 Coulson, J. B. B. Capt. (ret.) Rifle Brig.
 Courtenay, E. Jas. Lieut. 35th Regt. (11.)
 Courtney, D. C. Lieut. R.E. (11.)
 Coventry, H. A. F. F. Lt. late 60th Rifles (11.)
 Cowan, Phineas Lt.-Col. 3rd London R.V. (11.)
 Cowell, Sir J. C., KCB. Lieut.-Col. R.E.
 Cowper, H. Capt. late King's German Legion
 Cox, Francis Edward Lieut.-Col. R.E.
 Cox, H. J. W. Capt. 9th Kent Art. Vols. (11.)
 Cox, James Ponsonby Lt.-Col. R.E. (11.)
 Cox, R. Sneyd Major Hereford Mil.
 Cox, Talbot A. Col. 3rd Buffs (11.)
 Crabbe, Eyre M. S. Lt. Gren. Gds. (11.)
 Craigie, Patrick G. Capt. Roy. Perth Rifles (11.)
 Craster, G. A. Lieut.-Col. R.E. (11.)
 Craufurd, H. R. G. Lieut. late R.A. (11.)
 Craufurd, J. R. Gen. Col. 91st Regt. (11.)
 Craven, Geo. EARL of Capt. Warwick Yeo. (11.)
 Craven, Wm. George Lieut. Gloucestershire Yeo. late Lt. 1st Life Gds.
 Crawford, Geo. A. Maj. 4th R. Lanc. Mil. (11.)
 Crawford, Thos., MD. Surgeon-Gen. (11.)
 Craufurd, C. W. F. Lieut. R.N. (11.)
 Craufurd, H. J. Lieut. Gren. Gds. (11.)
 Craufurd, H. P. E. F. Maj. Mad. S. C. (11.)
 Crawley, T. G. Capt. 8th or King's
 Crawley, T. R. Col. (11.)
 Creagh, John Major 5th Fus. (11.)
 Crealock, H. Hope, CB. Col. Unatt. (11.)
 Creed, Henry late Lt.-Col. 1st Middl. Art. Vols. late Capt. Bombay Army (11.)
 Creek, Edwd. Stanley Capt. 23rd R. W. Fus. (11.)
 Cremorne, Vesey LORD, MP. Lt.-Col. late Coldm. Gds. (11.)
 Creser, Thomas Comr. R.N. (11.)
 Creyke, A. S. Capt. R.E.
 Creyk, William, MB. Surg.-Maj. R.A. (11.)
 Crichton, Hon. C. F. Lieut.-Col. late Gr. Gds. (11.)
 Crichton, D. M. M. Lt.-Col. Gren. Gds. (11.)
 Crichton, Hon. Hen. G. L. Capt. 21st Huss. (11.)
 *Crofton, Stephen S. L. Rear-Adm.
 Croggan, J. W. Lt.-Gen. Col. Comt. R.A. (11.)
 Crohan, Herbert Comr. R.N. (11.)
 Crokat, Chas. F. War Office (11.)
 Croker, Wm. Major (ret.) 27th Regt. (11.)
 Croker-King, C. E. Capt. 78th Highlrs. (11.)
 Crombie, T. Lieut.-Gen.
 Crommelin, W. A. M.-Gen. R.E. (11.)
 Crookshank, Alex. Crowder, CB. Dep. Com.-Gen. (11.)
 Crookshank, Arthur Capt. Ben. S.C. (11.)
 Crosse, Joshua G. Major (ret.) 62nd Regt. (11.)
 Crossley, L. J. Capt. 8th W.Y. Art.V. (11.)
 *Crossman, William, CMG. Lieut.-Col. R.E. (11.)
 Crowe, S. M. Capt. late Kent Art. Mil.
 Crozier, H. E. Capt. R.N. (11.)
 Crozier, Richard Adm. (11.)
 Cruikshank, A. R. Capt. R.A.
 *Cuffe, O. W. Capt. (h.p.) R. M. A. Adj. Waterford Art. Mil. (11.)
 Cumberland, C. E. Col. R.E. (11.)
 Cumberlege, H. O. Capt. Ben. S. C. (11.)
 *Cumming, W. H. Capt. R.N. (11.)
 Cumming, Wm. Capt. (ret.) 48th Regt. (11.)
 Cundell, J. P. Lieut. R.A. (11.)
 Cuninghame, Sir W. J. M., Bart., &c. Major (11.)
 Cunningham, J. W. H. Capt. late 2nd Life Gds.
 Cunningham, John D. Lieut. R.A. (11.)
 Cunynghame, Henry H. Lieut. late R.E. (11.)
 Cuppage, Sir Burke, KCB. Lt.-Gen. Col. Comt. R.A.
 Cureton, E. B. Col. (11.)
 Curme, C. T. Capt. R.N. (11.)
 Currie, A. D. Capt. 41st Regt. (11.)
 Currie, James P. Maj. Civil Ser. Vols. (11.)
 Curteis, Edwd. W. Lieut. 24th Regt. (11.)
 Curtis, A. C. Capt. R.N. (11.)
 Curtis, James D. Comr. R.N. (11.)
 Curtis, Reginald Col. R.A. (11.)
 *Curtis, Seymour Capt. R.N. (11.)
 Curzon, Hon. E. G. Col. 52nd L. I.
 Curzon, Hon. Montague Lt. Rifle Brig. (11.)
 Cust, Henry Francis Capt. North Salop Yeo. MP.
 Cust, John Francis Lt.-Col. late Gr. Gds.
 Custance, F. H. Lt.-Col. late Gren. Gds. (11.)
 Cutler, Fredk. Sub-Lt. late 1st W.I. Regt. (11.)
 DACRES, Sir R. J., GCB. Gen. Col. Comt. R.A. (11.)
 Dale, Chas. L. Lieut. 2nd W. I. Regt. (11.)
 Dalison, M. D. D. Lt. S. F. Gds. (11.)
 Dallas, R. C. F. Lieut. late 98th Regt. (11.)
 Dalrymple, Sir H., Bart. Lt.-Col.
 Dalrymple, J. H. E. Lieut.-Gen. (11.)
 Dalrymple, Hon. North de C. Lieut. S. F. Gds. (11.)
 Dalrymple, W. R. E. Lieut. Rl. Ayr and Wigtown Mil. (11.)
 D'Aguilar, Chas. L., CB. Maj.-Gen. R.A. (11.)
 Dalton, C. J. Maj.-Gen. R.A. (11.)
 Damer, S. L. Dawson Capt. late S. F. Gds. MP. (11.)
 Dames, T. L. Capt. late R.A. (11.)

- Dangan, LORD Lt.-Col. (ret.) Cold. Gds. (11.)
 Daniel, R. H. Lt.-Col. 18th R. Irish (11.)
 Daniell, C. F. T. Lt.-Col. late 28th Regt. (11.)
 Darley, W. S. Lieut. 5th Fusiliers
 Darling, Sydney Lieut.-Col. (11.)
 *Dartmouth, EARL of Capt. Staf. R.V. (11.)
 Darwin, S. C. Lieut. R.N. (11.)
 Dashwood, G. J. E. Capt. late S. F. Gds. (11.)
 *Daubeny, A. G. Major 7th Fusiliers (11.)
 Daubeny, E. Capt. (ret.) 58th Reg. (11.)
 Daubeny, James, CB. Maj.-Gen.
 Daubeny, J. F. Capt. late 18th Roy. Irish (11.)
 Daubeny, W. A. Major late 3rd Buffs (11.)
 Daunt, Arthur H. Lieut. 7th Royal Fus. (11.)
 Daunt, John C. C., *W.C.* Capt. Beng. S.C. (11.)
 Davidson, C. R. T. Capt. R.E. (11.)
 *Davidson, D. Lt.-Col. City of Edin. R. Vols., (ret.) Bom. Army (11.)
 Davie, Sir H. R. Ferguson, *Bart.* Gen. Col. 73rd Regt. MP. (11.)
 *Davies, Geo. S. Major (11.)
 Davies, Henry F. Lt.-Col. Gren. Gds. (11.)
 Davis, Hugh Comr. R.N. (11.)
 *Davis, John Capt. 2nd Surrey Mil. (11.)
 Dawes, Thomas Capt. Ben. S.C. (11.)
 Dawson, D. F. R. Lieut. Cold. Gds. (11.)
 Dawson, Hon. E. S. Comr. R.N. (11.)
 Dawson, John R. Capt. Haddington Mil. Art. (11.)
 Dawson-Scott, R. N. Major R.E. (11.)
 Dawson, Vesey John Lt. Cold. Gds. (11.)
 Deane, B. M. Lt.-Col. 19th Regt. (11.)
 Deane, H. B. Capt. Inns of Court R.V. (11.)
 De Bathe, Sir H. P., *Bart.* Lt.-Gen. (11.)
 *De Butts, J. C. B. Col. R.E. (11.)
 Deering, Chas. L. H. Capt. Dublin Mil. Lt. late 28th Regt. (11.)
 *De Fonblanque, E. B. ret. Controller (11.)
 *Degacher, H. J. Major 24th Regt. (11.)
 *De Horsey, A. F. R. Rear-Adm. (11.)
 De Horsey, W. H. Beaumont Col. Gr. Gds. (11.)
 De Kantzow, Herbert P. Capt. R.N. (11.)
 De la Poer, R. H. Lt. late 15th Regt. (11.)
 De la Voye, Alex. M. Lieut. 56th Regt. (11.)
 De Moleyns, T. A. Major R.A. (11.)
 Denison, Henry Lieut. R.E. (11.)
 Denny, Cuthbert C. Lieut. late 17th Regt. (11.)
 Dent, Herbert W. 2nd Queen's Rl. (11.)
 *De Robeck, Hastings St. J. Comr. R.N. (11.)
 De Sate-de Thoren, O. W. Capt. late 38th Regt. (11.)
 De Salis, Rodolph, CB. Maj.-Gen. (11.)
 De Schmid, H. W. F., Capt., South Devon Mil. (11.)
 *Desborough, John, CB. Col. R.A. (11.)
 De Teissier, The BARON. Col. Unatt. (11.)
 De Vesci, J. R. W. VISCOUNT Lieut.-Col. Cold. Gds. (11.)
 Dewar, J. R. J. Major R.A. (11.)
 De Winton, F. W. Major R.A. (11.)
 De Winton, Walter Capt. late 1st L. Gds. (11.)
 D'Eve, W. R. Capt. (ret.) 92nd Regt. (11.)
 Dick, Wm., MD. D.-I.-G. Hosps. (11.)
 Dickens, C. H., CSI. Col. R.A. (11.)
 Dickens, C. S. S. Capt. late R. Sussex L. I. Mil.
 Dickinson, J. D. late Lieut. 24th Regt. (11.)
 Digby, the Hon. E. C. Capt. Gren. Gds. (11.)
 Digweed, W. H. Lt.-Col. late Hants. Mil. (11.)
 Dillon, Hon. Arthur Dep.-Lieut. Co. Mayo (11.)
 Dillon, H. A. Capt. Oxf. Mil., late Lieut. Rifle Brig. (11.)
 *Dillon, Martin, CB. CSI. Col. Rifle Brig. *ADC. to the Queen* (11.)
 Dillon, R. H. Capt. 45th Regt. (11.)
 Disney, E. J. Capt. Essex Rifles, late 7th Fus. (11.)
 Dixon, Manley C. M. Capt. 8th or King's (11.)
 Dixon, Walter C. Lt. 10th Surrey R.V. (11.)
 Dixon, Wm. Manly Hall, CB. Maj.-Gen. (11.)
 Dobbs, F. G. Lt. 1st Midx. Art. V. (11.)
 Dobson, G. Adm. (11.)
 Docker, E. S. D.-I.-G. of Hospitals
 Doherty, Chas. W. O. Lieut. 2nd Royal N.B. Dragoons (11.)
 Doherty-Waterhouse, D. H. Capt. (ret.) 3rd Huss. (11.)
 Dolby, J. E. A. Capt. late N. Y. Rifles (11.)
 Domville, Sir Charles C. W., *Bart.* Col. late Dublin Co. L. I. Militia (11.)
 Domville, W. Major, late 21st R. N. B. Fus., (ret.) Worcester Militia (11.)
 Domville, J. W. M.-Genl. R.A. (11.)
 Doncaster, J. B. Capt. 73rd Regt. (11.)
 *Doorly, M., Maj. late Paym. 1st W.I. Regt.
 Dorchester, LORD Col. late Cold. Gds.
 Dorling, Francis Lieut. 96th Regt. (11.)
 Dormer, LORD Capt. late 74th Highlrs., (11.)
 Dorville, John W. Capt. R.N. (11.)
 Douglas, George M. Capt. 33rd Regt. (11.)
 Douglas, Sir John, KCB. Lt.-Gen.
 Douglas, Sir Rob. Percy, *Bart.* Gen. Col. 98th Regt. (11.)
 Douglas, Sholto Capt. R.N. (11.)
 Dowding, Herbert W. Lieut. R.N. (11.)
 Dowson, C. S. Lt.-Col. late 10th Regt. (11.)
 Doyle, Sir C. Hastings, KCMG, Major-Gen. Col. 87th Regt. (11.)
 Doyle, Francis G. Capt. 2nd Dr. Gds. (11.)
 Drake, F. G. A. Capt. late R. H. Gds.
 *Drake, J. Mervin C. Major R.E. (11.)
 Drake, Thomas George Capt. R.N.
 Draper, Edward T. Navy Agent (11.)
 Drayson, Alfred Wilkes Col. R.A.
 Drew, Andrew Adm. (11.)
 Drew, F. B. Lt.-Col. 8th or King's (11.)
 Druitt, Percy S. Lieut. 101st Regt. (11.)
 Drummond, Archd. S. Lt. S. F. Gds. (11.)
 Drummond, A. H. Capt. Rifle Brig. (11.)
 Drummond, Edgar A. Lt. R.N. (11.)
 Drummond, John Capt. late 10th Huss. (11.)
 Drury, Byron Rear-Adm.
 Du Cane, E. F., CB. Lt.-Col. R.E. (11.)
 Du Cane, F. Major (ret.) R.E. (11.)
 Ducie, EARL of Lord Lieut. Gloucester (11.)
 Duckett, W. M. Lieut. 21st R.N.B. Fus. (11.)
 Duff, A. M. Capt. (ret.) 74th Highlrs. (11.)
 Duff, James Maj. late 23rd R. W. Fus. (11.)

- Duff, R. W. Major R.E. (11.)
 Dugdale, A. G. Lieut. R.A. (11.)
 Dunbar, W. M. Major 24th Regt.
 Duncan, A. W. Major R.A. (11.)
 Duncan, Fras. Major R.A. (11.)
 Duncan, John Capt. 102nd Regt. (11.)
 *Duncan, P. Capt. W. Cork Art. Mil. (11.)
 Duncombe, Hon. A. Adm. (11.)
 Duncombe, Hon. Cecil Capt. late 1st L. Gds.
 Duncombe, C. W. Capt. 1st Life Gds.
 Duncombe, George T. Capt. late 16th Regt.
 Dundas, James D. Major 60th Roy. R. (11.)
 Dundas, Thomas Maj. (ret.) 12th Regt. (11.)
 Dunlop, Franklin, CB. Lieut.-Gen. R.A.
 *Dunne, J. H. Col. 99th Regt. (11.)
 Dunne, T. J. B. Lieut. 2nd Queen's Royal Regt. (11.)
 Dunsany, Right Hon. Edw. LORD Vice-Adm. (11.)
 Durham, P. F. Capt. late 37th Regt. Adj. Royal Cardigan Rifles
 Durie, Charles Lieut.-Col.
 Durnford, F. A. Lt.-Col. Sur. Art. Vols. (11.)
 Dutton, W. C. Lieut. West. I. Regt. (11.)
 Dwyer, L. F. W. Capt. 106th Regt. (11.)
 Dyson, Edward Maj. late 3rd Dr. Gds. (11.)
 *EAST, Cecil J. Major 41st Regt. (11.)
 Eastwick, E. B., CB., Lieut. late 6th Bomb. N.I. MP. (11.)
 Eastwick, W. J. Capt. (ret.) Bo. Army (11.)
 Eaton, H. F. Capt. Gren. Gds. (11.)
 Eden, Sir Charles, KCB. Admiral
 Eden, H. H. Capt. 30th Regt. (11.)
 Eden, J. Capt. late 14th Hussars
 Eden, M. R. Major unatt. (11.)
 Eden, W. Hassall Gen. Col. 90th L. I. (11.)
 Edenborough, H. Maj. late W. Essex Mil.
 Edgecombe, Hon. C. E. Lt.-Col. late Gr. Gds. (11.)
 Edgecombe, Piers Lieut. 44th Regt. (11.)
 Edmeades, H. Major R.A. (11.)
 Edmunds, Charles Vice-Adm.
 Edridge, F. L. Lt.-Col. 20th Regt. (11.)
 Edwards, F. J. Lieut. R.E. (11.)
 *Edwards, J. B. Lieut.-Col. R.E. (11.)
 Edwards, Nathaniel F. Capt. R.N.
 Egerton, Alfred M. Capt. R. H. Gds. (11.)
 *Egerton, Hon. Francis, MP. Rear-Adm. (11.)
 Egerton, F. P. Capt. R.N.
 *Egerton, F. W. Comr. R.N. (11.)
 Egerton, Sir P. de Malpas Grey, Bart., MP. FRS. Lt.-Col. Cheshire Yeomanry (11.)
 Egerton, P. de R. Capt. late Cold. Gds. (11.)
 Egerton, W. W. Capt. 8th or King's (11.)
 Elcho, LORD, MP. Col. Lond. Sec. R. V. (11.)
 Elgee, C. W. Col. R.A. (11.)
 Elias, Alfred Capt. Royal Edmonton Rifle Regt. (11.)
 Elias, Robert Capt. 59th Regt. (11.)
 Elliot, Hon. C. G. C. Capt. (ret.) Gr. Gds.
 *Elles, W. K. Major 38th Regt. (11.)
 Ellice, Sir C. H., KCB. Lieut.-Gen. (11.)
 Elliot, A. F., MD. Staff Surgeon (11.)
 Elliot, Hon. Charles G. J. B., CB. Adm.
 Elliot, George Admiral (11.)
 Elliot, John Col. R.M.L.I. (11.)
 Elliot, W. H. Major-Gen. late R.A. (11.)
 Elliott, Wm. Capt. 4th E.Y. Art. V. (11.)
 Ellis, C. H. Fairfax Capt. R.A. (11.)
 Ellis, Fred. Capt. late 9th Lancers (11.)
 Ellis, William Rear-Adm. (11.)
 Ellis, W. B. E. Major R.A.
 Ellison, R. G. Maj. (ret.) 9th Lancers (11.)
 Elliston, E. C. Capt. B.S.C. (11.)
 Elmsall, W. de C. Major late R. Drs. (11.)
 Elphinstone, John Col. Madras S. C. (11.)
 Elrington, F. R., CB. Maj.-Gen. late Rifle Brig. (11.)
 Elrington, W. F. Lt.-Col. late Sec. Fus. Gds. (11.)
 Elsdale, H. Lieut. R.E. (11.)
 Elwes, W. C. C. Capt. (ret.) 71st H. L. I. (11.)
 Elwyn, Thomas Lt.-Gen. R.A. (11.)
 Elyard, J. Major 2nd Rl. Sur. Mil. (11.)
 *Enfield, VISCOUNT, MP. Hon. Col.
 Royal Edmonton Rifle Regt.
 England, F. Herbert Lieut. 61st Regt. (11.)
 England, Sir Rich., GCB. KH. Gen. Col. 41st Regt. (11.)
 Enniskillen, W. W., EARL of, FRSE. Col. Fermanagh Militia (11.)
 Errington, A. C. Lieut.-Gen. (11.)
 Errington, A. J. Comr. R.N. (11.)
 Erskine, Geo. Major-Gen. (11.)
 Erskine, J. Elphinstone, Adm. (11.)
 Estridge, Geo. Lt.-Col. late St. Kits Mil. (11.)
 Evans, E. T. Lieut. 94th Regt. (11.)
 Evans, George Adm. (11.)
 Evans, H. D. Capt. R.A. (11.)
 Evans, H. Lloyd Lt.-Col. late Indian Army (11.)
 Evans, John Capt. (ret.) 6th Innis. Drs. (11.)
 Evans, Saml. T. G. Capt. Eton R. Vols. (11.)
 Eveleigh, G. C. Capt. (h.p.) R.A.
 Evelyn, C. F. Maj. 3rd R. Sur. Mil. (11.)
 Ewart, Henry P. Lieut.-Col. 2nd Life Gds.
 Ewart, R. W. Capt. Scot. Borders. Mil. (11.)
 Ewart, W. S. Lt.-Col. (ret.) Gren. Gds. (11.)
 Exeter, MARQUIS of Col. Northampton Mil., ADC. to the Queen
 Eyre, F. V. Major R.A. (11.)
 Eyre, Henry Gen. Col. 59th Regt. (11.)
 Eyre, Henry R. Lt.-Col. Cold. Gds. (11.)
 Eyre, Philip H. Major 38th Regt. (11.)
 Eyre, Sir Vincent, CB. KCSI. Maj-Gen. (11.)
 FABER, W. Raikes, CB. Lt.-Gen. Col. 17th Regt.
 Fagan, C. S. F. Lieut. R.M.L.I. (11.)
 Fairfax, T. F. Lt.-Col. (ret.) Gr. Gds. (11.)
 Fanshawe, Charles M.-Genl. R.E.
 Farewell, W. T. F. Col. Mad. S. C. (11.)
 *Farquhar, Arthur Vice-Adm. (11.)
 Farquhar, F. G. Capt. 2nd R.N.B. Drs. (11.)
 Farquharson, J. R. Lt.-Col. (ret.) S. F. Gds.
 *Farquharson, M. H. Capt. R.M.L.I. (11.)
 Farr, William Lieut. R.N. (11.)
 Farrell, H. C. Major R.A. (11.)
 Farrell, J. Sidney Major (ret.) R.A.
 Farrell, J. D. C. Maj. 26th Kt. R. V. (11.)
 Farrell, Sidney B. Lt.-Col. R.E.
 Farrer, Henry Capt. 94th Regt. (11.)

Farrer, W. D. M. C. P.	Lt. Gren. Gds. (11.)	Forster, F. R.	Lt.-Col. (h.p.) 4th R.I. D.Gds.
Farrington, H. D'O.	Maj. 73rd Regt. (11.)	Forster, J. F.	Capt. 46th Regt. (11.)
*Farrington, M. C.	Maj. 51st K.O.L.I. (11.)	Forster, Wm.	Capt. 60th Rifles (11.)
*Fawcett, R. H.	Capt. 33rd Regt. (11.)	Forsyth, Frederick A.	Capt. 5th Fus. (11.)
Fawkes, Wilmot H.	Lieut. R.N. (11.)	Forsyth, T. H.	Capt. 62nd Regt. (11.)
Feilden, H. M.,	Capt. late 1st Royal	Fortescue, Cyril D.	Capt. Cold. Gds. (11.)
Lanc. Mil. MP.		Fortescue, E. Francis	Capt. 36th Beng.
Feilden, R. J.	Col. late 60th Rifles (11.)	N.I. (11.)	
Fellowes, Edward	Col. late 11th Huss.	Fortescue, Francis	Capt. late Sco. Fus. Gds.
Fellowes, P. H.	Col. R.M.L.I.	*Fosbery, Geo. V.,	Lieut.-Col. Beng.
Fenning, S. W.	Lieut.-Col. (11.)	S. Corps. (11.)	
Fenwick, N. E. de B.	Lieut. 60th Rifles (11.)	Fosbery, W.T.E.	Capt. (h.p.) 77th Regt. (11.)
Ferguson, G. A.	Lieut.-Col. (ret.) Gren. Gds.	*Foster, C. E.	Capt. 58th Regt. (11.)
Festing, Sir Francis W.,	CB, KCMG. Col.	*Foster, Kingsley O.	Capt. the King's Own
R.M.A. (11.)		1st Stafford Mil. (11.)	
Field, Æsculapius	late Hon. Corps	Fowler, Chas. J.	Lt.-Col. R.E. (11.)
Gentlemen-at-Arms		Fowler, G. C.	Capt. R.N.
Field, G. T.	Col. R.A. (11.)	Fowler, Robert Dashwood	Capt. R.N.
*Field, J. W. P.	Capt. H.A.C. (11.)	Fox, Augustus H. Lane	Col. (h.p.) Gren.
Fife, Aubone G.	Lieut. 5th Lancers (11.)	Gds. (11.)	
Fife, J. Cookson	Capt. 65th Regt. (11.)	Fox, Edwin	Capt. (ret.) H.A.C.
Filmer, Sir Edm.,	Bart. late Cornet Royal	*Fox, L. Loftus B.	Capt. R. Longford Rifle
East Kent Yeo.		Mil. (11.)	
Finucane, George	Col.	Fox, J. T. R. Lane	Capt. (ret.) Gr. Gds. (11.)
Firebrace, Frederick	Capt. R.E. (11.)	Fox, Maxwell	Comr. R.N. (11.)
Fisher, A. A'Court, CB.	Col. R.E. (11.)	*Frampton, W. J.	Capt. 59th Regt. (11.)
Fischer, J. F.	Col. R.E. (11.)	Frank, P.	late Staff-Surgeon (11.)
Fitzgerald, Charles C. P.	Comr. R.N. (11.)	Frankland, Colvill	Major 103rd Regt. (11.)
Fitzgerald, P. S.	Capt. late 2nd R. Lanc. R.	Franklen, C. R.	Major R.A.
Fitzhugh, H. T.	Col. R.A. (11.)	Franklyn, Edw. J., MD.,	FRCS. D. Surg.
FitzJames, Arthur Chas.	Col. Comt.	Genl. (11.)	
4th R. S. Midx. Mil.	late 93rd Highrs.	Franklyn, T. P.	Capt. 1st Kent R.V. (11.)
Fitz-Patrick, Hon. B. E. B.	Capt. Rl.	Fraser, Hon. Alex. E.	Lt.-Col. late S.F.Gds.
Cork Art. Mil.,	late Lieut. 1st Life Gds. (11.)	(11.)	
Fitzroy, A. W. M.	Lieut. Cold. Gds. (11.)	Fraser, A. R.	Lieut. R. A. (11.)
Fitzroy, Lord A. C. Lennox, CB.	Maj.-	Fraser, Charles C.,	CB. Col. late
Gen. (11.)		11th Hussars (11.)	
Fitzroy, C. C.	Maj. (ret. h.p.) 68th L.I. (11.)	Fraser, Hon. H. T.	Lt.-Col. S. F. Gds. (11.)
Fitzroy, Lord F. J.	Lt.-Col. late Gr. Gds. (11.)	Fraser, J. Keith	Lt.-Col. 1st Life Gds. (11.)
Fitzroy, G. R.	Lieut.-Col. Cold. Gds. (11.)	Fraser, James, CB.	Col. late 72nd Highrs.
Fitzroy, Philip	Major 5th Fus. (11.)	(11.)	
*Fitz Roy Robert O'B.	Capt. R.N. (11.)	Fraser, W. J.	late Lieut. 1st Tower Hamlets
*Fletcher, H. C., CMG.	Col. Sco. Fus.	Eng. Vols. (11.)	
Gds. (11.)		Freeland, Russell G.	Ens. (ret.) 4th K.O. (11.)
Flood, H.	Capt. 2nd Queen's (11.)	Freer, C. T.	Major Leicester Yeo.
Flood, J. C. H.	Lieut. 19th Huss. (11.)	Freese, J. N. A., CB.	Gen.
*Flower, Lamorock	Capt. 3rd R. Sur. M. (11.)	Freeth, S.	Maj.-Gen. R.E. (11.)
Flower, Stephen	Capt. 86th Regt. (11.)	Fremantle, Fitzroy W.	Lt.-Col. C. Gds. (11.)
Fludyer, C.	Lieut.-Col. late Gren. Gds.	French, J. D. P.	Lieut. 19th Huss. (11.)
Foley, Hon. A. F.	Col. late Gren. Gds.	French, P. T.	Lt.-Col. (ret.) Bomb. Army
Foley, Hon. St. Geo. Gerald, CB.	Maj. Gen. (11.)	Frobisher, W. M.	Capt. (ret.) 34th Regt. (11.)
Follett, R. W. Webb	Capt. Cold. Gds. (11.)	Frome, Edw.	Gen. R.E. (11.)
Forbes, J.	Lieut.-Col. late Cold. Gds.	Fugion, Edw.	Major (11.)
Forbes, John, CB.	Maj.-Gen. Bombay	Fullford, Wm.	Major (ret.) R.A.
Army (11.)		Fullerton, A. G.	Major late 2nd Life Gds.
Forbes-Leslie, Jonathan	Lieut.-Col. late	Furse, P. G. F.	Commissary (11.)
78th Highlanders		*Fyers, Henry Thomas	Capt. (h.p.) R.A.
Forbes, Stewart	Lt.-Col. 1st Roy. Surrey Mil.	Col. E. and N. York Art. Mil. (11.)	
Forbes, Sir William, Bt.	Lt.-Col. Aberdeen	*Fyers, W. A., CB.	Col. late R. Brig. (11.)
R. Vols. late Lieut. Cold. Gds. (11.)		Fynn, Robt. N.	late Lt. 2nd W. York Mil.
*Forbes, Hon. W. F.	Lt.-Col. Leitrin R. (11.)	(11.)	
Ford, Chas. Erskine	Maj.-Gen. R.E.	GAGE, Hon. E. T., CB.	Col. R.A. (11.)
Ford, Edmund Twiss	Major-Gen.	Gaisford, Horace C.	Capt. Gr. Gds. (11.)
Ford, James E.	Lt.-Col. late Sco. Fus. Gds.	Galloway, EARL OF	Capt. late R.H. Gds.
Forester, Hon. H. T.	Lt.-Col. late Gr. Gds.	Galloway, T. J., Lt.-Gen.	Col. 49th Regt. (11.)
Forster, B. L.	Lt.-Col. R. A.	*Galton, Douglas, CB. FRS.	Capt. (ret.) R.E.
Forster, Charles	Capt. 2nd Stafford Mil. (11.)		

- Gds. (11.) Gamble David Lieut.-Col. 47th Lanc. R.V. (11.)
 (11.) Gamble, John H. Lieut. 17th Regt. (11.)
 (11.) Gamlen, W.B. Ens. late 23rd Mid. R.V. (11.)
 (11.) Gammell, Major A. late 43rd Regt.
 (11.) Gammell, J. H. H. Major 54th Regt. (11.)
 Beng. Gandy, F. Lt.-Col. late S. F. Gds.
 Gds. Gardiner, A. M. Lieut. R.N. (11.)
 Beng. Gardiner, Chas. G. Lieut. R.N. (11.)
 Gardiner, R. M. late Com. Gen. (11.)
 (11.) Gardiner, W. Comr. R.N.
 (11.) Gardiner, C. H. Capt. 12th Regt. (11.)
 (11.) Gardiner, G. H. Capt. R.N. (11.)
 Own Gardner, W. B. Maj.-Gen. (ret.) R.A. (11.)
 (11.) Gardyne, C. Greenhill Lieut.-Col. (ret.)
 R.N. Cold. Gds. (11.)
 ren. Garforth, E. St. John Capt. R.N. (11.)
 *Garlick, J. W. Capt. 106th Regt. (11.)
 *Garnham, R. E. W. Major 6th W. York Militia (11.)
 A.C. Garnett, A. P. Major 11th Hussars
 Rifle Garratt, J. A. T. Lt.-Col. Gren. Gds. (11.)
 (11.) Garratt, Francis Lieut. Roy. 1st Devon Yeo.
 (11.) late Capt. 3rd Drag. Gds. (11.)
 (11.) Garrock, Sir John, GCB. Lieut.-Gen. (11.)
 (11.) Gascoigne, Chas. Gen. Col. 72nd Regt. (11.)
 (11.) Gascoigne, Clifton Lt.-Col. (ret.) G. Gds.
 (11.) Gascoigne, W. J. Lt.-Col. Sec. Fus. Gds. (11.)
 rg. Gatacre, W. F. Capt. 77th Regt. (11.)
 (11.) Gaussen, Alfred W. G. Lieut. 43rd Regt. (11.)
 (11.) Gautier, F. E., Capt. *ADC. to the Governor of Quebec* (11.)
 Gds. Gawler, John C. Col. late 73rd Regt. (11.)
 Geary, H. Capt. R. A. (11.)
 Geary, H. le G. Major R.A. (11.)
 late Geddes, W. L. Capt. 53rd Regt.
 (11.) *German, James Major (ret.) 3rd R. Lanc. Mil. (11.)
 (11.) Germon, R. C. H. Major 9th Regt. (11.)
 rs. George, O. W., M.D. Surg.-Major 1st Life Guards (11.)
 ets Gibbon, Arthur War Office (11.)
 (11.) *Gibbons, Charles Capt. R.N. (11.)
 (11.) Gibbons, John Dep. Surg.-Genl.
 eo. Gibbs, Charles Major late 2nd Queen's (11.)
 (11.) Gibbs, J. R. Lieut. 6th Regt. (11.)
 (11.) Gibson, Edwd. Lt. late So. Glou. Mil. (11.)
 (11.) *Gilbard, Geo. J. Capt. 71st H. L.I. (11.)
 (11.) Gilford, Viscount Rear Adml. (11.)
 ay Gill, F. Capt. 39th Middlesex R.V. (11.)
 (11.) Gillespie, R. Rollo Lt.-Col. 106th Bo. L.I. (11.)
 (11.) Gillett, Henry Major 13th Light Inf. (11.)
 A. Gillett, W. Capt. Uxbridge Yeo. (11.)
 is. *Gilmore, A. H. Comr. R.N.
 (11.) Gimson, Herbert Navigating Lieut. (11.)
 A. Gilpin, Sir Rich., T., *Bt. Col. Bedford. Mil. MP.*
 (11.) Gipps, H. Capt. (ret.) 9th Regt. (11.)
 (11.) Gipp, Reginald Col. S. F. Gds.
 (11.) Girardot, G. C. Capt. 106th Regt. (11.)
 (11.) Gissing, Charles E. Lieut. R.N. (11.)
 (11.) Gladstone, J. R. Lieut. Cold. Gds. (11.)
 (11.) Glasspoole, W. A. Lt.-Col. Bo. S. Corps (11.)
 (11.) Gleig, A. C. Col. (h.p.) R.A. (11.)
 (11.) Gleig, C. E. S. Lt.-Col. (h.p.) 14th Regt.
 (11.) Gleig, Rev. G. R., MA. late Chaplain-General to the Forces (11.)
 Glendonwyn, W. R. D. S. Capt. 69th Regt. (11.)
 Glennie, Farquhar Capt. 24th Regt. (11.)
 Glover, Sir John H., GCMG. Capt. RN. (11.)
 Glyn, R. T. Col. 24th Reg. (11.)
 Glyn, Sir Rich. G. Capt. late 1st R. Drags.
 Glyn, Hon. Sidney Carr Capt. late R. Brig. (11.)
 Godbold, G. A. B. Lieut. 12th Regt. (11.)
 *Godman, A. F. Major late 6th Dragoon Guards (11.)
 Godsal, P. T. Lieut. 52nd Regt. (11.)
 Godwin, A. A. Major 103rd R. B. Fus. (11.)
 Godwin-Austen, F. Lt. 2nd W.I. Regt. (11.)
 Godwin-Austen, H. H. Major B. S. C. (11.)
 Goff, Robert Charles Maj. Cold. Gds. (11.)
 Golding, Henry Capt. 37th Regt. (11.)
 Goldsmid, Sir Frederic J., CB., KCSI. Maj.-Gen. late I.A. (11.)
 Goldsmith, George, CB. Adm. (11.)
 Goldsworthy, J. W. Lt. late 86th Regt. (11.)
 *Goldsworthy, W. T. Lieut.-Col. late 91st Highlanders (11.)
 Gonne, T. Major 17th Lancers (11.)
 Goodall, George Lieut. late R.E. (11.)
 Goodenough, O. H. Major R.A. (11.)
 Goodenough, W. H. Col. R.A. (11.)
 Goodlake, G. L., *U.C.* Col. late Cold. Gds.
ADC. to the Queen
 Goold-Adams, F. M. Lieut. R.A. (11.)
 Goolden, G. B. Comr. R.N. (11.)
 Gordon, Alex. W. M.-Gerl. (11.)
 Gordon, C. S. S. Evans Col. Gov. R.V. Hosp. (11.)
 Gordon, Cosmo F. M. Lieut. R.N. (11.)
 Gordon-Cumming, Sir W. G., *Bart.* Capt. S. F. Gds. (11.)
 Gordon, E. C. A. Col. R.E. (11.)
 Gordon, G. Grant Lt.-Col. S. F. Gds. (11.)
 Gordon, Geo. Hamilton Lt.-Col. R.E. (11.)
 Gordon, Henry W., CB. Com.-General
 *Gordon, J. J. H. Lt.-Col. Beng. S. C.
 Gordon, John Lt.-Col. late 47th Regt. (11.)
 Gordon, Robert W. T. Maj. 93rd Highl. (11.)
 Gordon, W. F. F. Major 63rd Regt. (11.)
 Gordon, W. C. Assist. Commissary (11.)
 *Gore, Augustus F. Lt.-Col. Barbadoes Mil. (11.)
 Gore-Browne, Harold Lt. 60th Rl. Rifles (11.)
 Gore, G. R. C. Ormsby, Lt. Cold.-Gds. (11.)
 Gore, W. R. O. Maj. late 13th L. Drs. MP.
 *Gort, S. P., Viscount. Hon. Colonel Lim. Mil.
 Gosling, Geo. Lieut.-Col. Sec. F. Gds. (11.)
 Gosling, W. C. F. Col. R.H.A. (11.)
 Gosset, W. D. Maj.-Gen. late R.E. (11.)
 Goulburn, Edward Col. late Gr. Gds.
 Gould, Henry O. Lt.-Col. late Gr. Gds. (11.)
 Gould, H. C. Maj. Royal Glamorg. Mil. (11.)
 Gould, R. F. Lieut. late 31st Regt. (11.)
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 Kelly, J. L. Capt. 62nd Regt. (11.)
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 Lambert, Walter M. Capt. R.M.A. (11.)
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 Middlx. R.V. late Lt.-Col. Gren. Gds. (11.)

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(17.) Litchford, E. B. Lieut. late 48th Beng. N.I.
(14.) Little, H. A. Major Beng. S. C. (14.)
(14.) Gds. Littledale, Edward Major late 1st Roy. Dns.
(17.) Littledale, F. C. H. Lieut. 29th Regt. (14.)
(17.) Lloyd, Arthur C. Lieut. 45th Regt. (14.)
(14.) Lloyd, C. W. Major 16th Regt. (14.)
(17.) Lloyd, Francis T. Capt. R.A. (14.)
(14.) Lloyd, G. M. Lieut. R.A. (14.)
(17.) Lloyd, Nesham Y. Lieut. 82nd Regt. (14.)
(14.) Lloyd, R. O. Lieut. R.E. (14.)
(17.) Lloyd, T. H. Capt. R. A. (14.)
(17.) *Lloyd, Thomas Capt. 35th Regt.
(17.) Lloyd, Thos. F. Lieut.-Col. 98th Regt. (14.)
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(17.) Gds. Loch, H. B., CB. Lt.-Col. 2nd Cheshire Mil.
(17.) and Lieut.-Gov. Isle of Man (14.)
(17.) Loch, W. Capt. 19th Bengal Cav. (14.)
(17.) Lochner, C.P. Maj. late 39th Midx. R.V. (14.)
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(17.) McCleverty, Wm. A. Gen. Col. 48th Regt.
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(17.) McCoy, T. R. Capt. late 65th Regt.
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(17.) Mil. (14.)
(17.) *McCrea, J. D. Capt. R.N. (14.)
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(17.) MacDonnell, H. J. Capt. late 12th Regt. (14.)
(17.) MacDonnell, John R. late Maj. 19th Middx.
(17.) R.V. (14.)
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(17.) McKillop, H. F. Capt. R.N. (14.)
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Mackinnon, L. B.	Capt. R.N. (11.)	*Martin, Francis	Capt. R.N. (11.)
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M'Murdo, W. M. S., CB.	Lieut.-Gen. (11.)	Maude, F. N.	Lieut. R.E. (11.)
McMullin, J.	Capt. Mad. S. Corps (11.)	Maude, G. A., CB.	Lieut.-Col. (ret.) R.H.A.
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Macpherson, J. F.	Capt. Border Rifles (11.)	Mawson, W. Willmott	Lt.-Col. 33rd Lanc. R.V. (11.)
Macqueen, D. R.	Capt. 75th Regt. (11.)	Maxse, Fred. A.	Rear-Adm.
Madden, Geo. C.	Lieut. 1st W. I. Regt. (11.)	Maxse, H. F. B.	Lt.-Col. late Cold. Gds.
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Maitland, G. G. W., FRCS.	D.S. Gen. (11.)	Mayers, J. P.	Col. late 86th Regt. (11.)
Maitland, H. L.	Capt. R.N. (11.)	Mayne, J. O.	Lieut.-Col. R.E. (11.)
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Malgarini, F. L.	Lt. Forfar and Kincardine Art. Mil. (11.)	Meade, H. R.	Major R.E. (11.)
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Malcolm, G. A., CB.	Lieut.-Gen. Col. 105th Madras L. I. (11.)	Meehan, Geo. Waller	Lieut.-Col. (11.)
Malcolm, G. J.	Capt. R.N. (11.)	Melgund, G. J. Viscount	Lt. (ret.) S.F. Gds. (11.)
Malden, Viscount	Lt.-Col. Herts Yeo. (11.)	Mellor, A.	Lieut. (ret.) 8th or King's (11.)
Malley, James	Lieut. (ret.) 53rd Regt. (11.)	Melville, P. Lawrence	Lt. 97th Regt. (11.)
Maltby, J. M.	Lieut. 1st W. I. Regt. (11.)	Melville, Teign	Lieut. 24th Regt. (11.)
*Malthus, Sydenham	Major 94th Regt. (11.)	Mends, Geo. C.	Rear-Adm.
Malton, W. D.	Capt. late Scottish Borderers Mil. (11.)	Mends, Herbert	Col. (ret.) 2nd W. I. R.
Manby, Charles, FRCS.	Lt.-Col. Eng. and Railway Vol. Staff Corps (11.)	Mends, Sir W. R., KCB.	Vice-Adm. (11.)
Manderson, G. R.	Major R. H. A. (11.)	Merrewether, Sir W. L., CB.	KCSI. Col. (11.)
Mansell, A. B.	Lieut. R.N. (11.)	Meryon, J. E.	Lieut. R.N. (11.)
Manson, A. R.	Maj.-Gen. (11.)	Mesham, Arthur	Capt. late 1st R. Drs. (11.)
Manson, Walter	Capt. R.E. (11.)	Messervy, Geo. T.	Capt. 21st Middlesex R.V. (11.)
March, W. H., CB.	Maj.-Gen. (ret.) R.M.L.I.	Metcalfe, John A.	Capt. 1st Durham Mil. (11.)
Margesson, W. G.	Lt.-Col. (11.)	Methuen, F. H. P. Lord	Col. R. Wilts (11.)
Marindin, H. R.	Maj. late 1st Royals (11.)	Methuen, Hon. Paul S.	Lt.-Col. S. F. Gds. (11.)
Markham, W. T.	Capt. late Cold. Gds.	Meurant, Edwd.	Lt.-Col. 83rd Regt. (11.)
Marquis, Jas.	Col. 17th Ben. N. I. (11.)	Meyrick, Aug. W. H.	Col. late Sco. Fus. Gds. (11.)
Marriott, C. F.	Capt. 6th Dr. Gds. (11.)	Michell, Sir John, GCB.	Lt.-Gen. Col. 86th Regt. (11.)
Marriott, H. C.	Maj. (ret.) 60th Rifles (11.)	Michel, J. Edward, CB.	Col. R.H.A. (11.)
Marriott, W. F., CSI.	Maj.-Gen. (unatt.) (11.)	Michalowski, F. H.	Capt. Georgetown Art. Mil. (11.)
Marriott, W. H.	Capt. 11th Regt. (11.)	Middleton, F. D.	Col. (11.)
Marryat, J. H.	Capt. R.N.	Middleton, Sir G. N. Broke, Bart., CB.	Vice-Adm. (11.)
Marsden, Richard	Capt. R.N.R. (11.)	Middleton, O. R.	Capt. 4th King's Own (11.)
*Marsden, William	Capt. 82nd Regt. (11.)		
Marshall, John, W.	Capt. Martin Rifle V. N.Z. (11.)		
Marsham, H. S.	Lieut. 60th Rifles (11.)		
Marsh, W. D.	Lieut.-Col. R.E. (11.)		

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 Own (1).

Mildmay, H. P. St. J. Lieut. Gren. Guards (1).
 *Mildmay, Sir Henry B. P. St. John, Bart. Lt.-Col. Hants Yeo. (1).
 *Mildmay, H. A. St. J. Capt. Rifle Brigade (1).
 Miles, H. S. G. Capt. 101st Regt. (1).
 Miles, Thos. G. Major N. Durham Mil. (1).
 Miller, D. S. Lt.-Col. (1).
 Miller, D. Capt. R.N. (1).
 Miller, G. M., CB. Lt.-Col. 79th Highls. (1).
 Miller, H. M. Capt. R.N. (1).
 Miller, T. C. Capt. 43rd Regt. (1).
 Miller, Thos. E. Lieut. R. N. (1).
 Milligan, Charles Major late 39th Reg. (1).
 Millington, Walter Capt. late 3rd Essex Art. Vols. (1).
 Mills, C. J. C. Maj.-General
 *Milman, G. A. Lt.-Col. (h.p.) R.A. (1).
 Milne, Sir Alex., Bart., GCB. Admiral (1).
 Milne, H. Maj.-General (1).
 Milner, Joseph Mid. R.N. (1).
 Minchin, J. W. Capt. Paymstr. 58th Regt. (1).
 Mitchell, C. B. H. Major R.M.L.I. (1).
 Mitchell, C. J. Capt. late Vict. Rifles (1).
 Mitchell, Hugh H. Capt. Rifle Brig. (1).
 Mitford, John Lt. Civil Service R. V. (1).
 Moffatt, K. M. Col. (1).
 Molony, C. M. Capt. R.A. (1).
 Molyneux, W. C. F. Lt. 22nd Regt. (1).
 Moncrieff, Alex., FR.S. Maj. Edin. Art. Mil. (1).
 *Moncrieff, Geo. H. Lt.-Col. S. F. Gds. (1).
 Moncrieff, L. N. Comr. R.N. (1).
 Money, E. C. Capt. 87th Fus. (1).
 Monson, Hon. D. J. Capt. (ret.) 96th Regt. (1).
 Montagu, Andw. Lt. 5th W. York Mil. (1).
 Montgomery, G. S., CSI. Maj.-Gen.
 Montgomery, W. E. Capt. S. F. Gds. (1).
 Montizambert, C. E. Maj. Canadian Art. (1).
 Montresor, H. E. Lt.-Col. (ret.) Gr. Gds.
 Moody, J. L., MA. late Chap. to the Forces (1).
 Moore, Arthur W. Lieut. R.N. (1).
 *Moore, A. G. Montgomery Col. 4th Huss. (1).
 Moore, H., CB. Lt.-Col.
 Moore, H. C. Lieut. R.E. (1).
 Moore, John C. Capt. late Rifle Brigade (1).
 Moore, R. C., CB. Lt.-Gen. R.A. (1).
 Moore, Thomas C. C. Maj.-Gen. R.M.L.I.
 Morant, W. S. Capt. late Gr. Gds. (1).
 Moray, H. E. H. Drummond Capt. S. F. Gds.
 Moray, J. C. D. S. Major 28th Bo. N.I. (1).
 More, George Lt. 3rd Essex Art. V. (1).
 Morgan, G. B. Maj. Town Maj. Gibraltar (1).
 *Morgan, Horatio Maj. Paym. 100th Reg. (1).
 *Morgan, J. P. Major R.A. (1).
 Morice, James A. Major (ret.) R.M.L.I. (1).
 Morrell, H. Capt. late Essex Rifles (1).
 Morrieson, J. Lieut.-Col. (1).
 Morrieson, R. Col. (1).
 Morris, Mark Naval Instructor (1).
 Morrison, W. L. Col. R.E. (1).
 Morse, H. B. Dep. Com.-General (1).
 Morshhead, A. A. Lieut. 24th Regt. (1).
 Mortimer, Stanley Capt. late 60th Rifles (1).
 Mortlock, Wm. Ens. Vict. R.V. (1).
 *Morton, G. de C. Lieut. 6th Regt.

Mostyn, Hon. M. late Paym. 21st R.N.B. Fus.
 Mostyn, Hon. Roger Lt.-Col. (ret.) S. F. Gds.
 Mount-Charles, G. H. EARL of Col. (h.p.) 1st L. Gds.
 Mountstevens, F. H. Capt. (h.p.) R.M.L.I. (1).
 Moysey, Charles John Capt. R.E. (1).
 Muir, Sir W. Muir, KCB. Director-Gen. Army Medical Department (1).
 Muncester, Lord, Capt. late R. Brig. MP. (1).
 Mundy, A. M. Capt. late Notts. Mil. (1).
 Mundy, Sir G. Rodney, KCB. Adm. (1).
 Munro, Campbell Capt. late Gren. Gds.
 Munro, C. A. Capt. Bengal Staff Corps (1).
 Murchison, K. R., formerly of the 13th and 58th Regts. and late Capt. Som. Yeo. (1).
 Mure, W., Lt.-Col. (ret.) S. F. Gds. MP. (1).
 Murphy, J. A. Lieut. 82nd Regt. (1).
 Murray, A. M. Lieut. R.A. (1).
 Murray, John Lt.-Col. late Gr. Gds. (1).
 Murray, J. M. Col. Ben. S.C. (1).
 Murray, K. D. Capt. 89th Regt. (1).
 Murtoigh, John Surg. (h.p.)
 Mussenden, W. Lt.-Col. 8th Hussars (1).
 NAGHTEN, A. R. Lt.-Col. Hants Art. Mil., MP. (1).
 *Napier, W. C. Major R.A. (1).
 *Nangle, Gerard J. Rear-Adm. (1).
 Nares, Sir Geo. S., KCB. Capt. R.N. (1).
 Nares, H. J. Lieut. 17th Regt. (1).
 *Nason, Jno. Col. (1).
 *Needham, John L. Capt. R.M. Art. (1).
 Neilson, W. M. Lt.-Col. 25th Lanark R.V. (1).
 Nelson, Thos., MD. D.I.G. Hospls. R.N. (1).
 Nelson, T. Lt.-Col. E. & N. Y. Mil. A. (1).
 Nelson, W. F. Capt. R.A. (1).
 Nesham, T. P. W. Lieut. R.N. (1).
 Nettleship, W. F. Capt. 9th Surrey R.V. (1).
 Neville, Edward Lt.-Col. (ret.) S. F. Gds.
 Newall, D. J. F. Col. R.A. (1).
 Newdigate, Edw. Col. (1).
 Newdigate, H. R. L. Lt.-Col. Rifle Brig. (1).
 Newington, Cecil G. H. Lieut. 31st Regt. (1).
 Newington, C. M. H. Capt. 22nd Regt. (1).
 Newton, W. E. Lt. late 1st Mid. Eng. V. (1).
 Newton, W. S. Lieut.-Gen.
 Nicholls, G. Lieut.-Col. 27th Bo. N.I. (1).
 Nicholls, Henry Maj. (ret.) 94th Regt.
 *Nicholson, Henry F. Capt. R.N. (1).
 Nicholson, Lothian, CB. Col. R.E. (1).
 Nicholson, W. G. Lieut. R.E. (1).
 Nicholson, S. J. Major R.A. (1).
 Nicoll, Chas. R. Surg.-Maj. (ret.) Gr. Gds.
 Nicolls, O. H. A. Lt. Col. R.A. (1).
 Nicolson, Sir Fred. W. E., Bart., CB. Admiral (1).
 *Nicolson, Frederick Lieut. R.H.A. (1).
 Noble, Andrew Capt. late R.A. (1).
 Nolan, J. Philip Capt. R.A., MP. (1).
 Nolloth, Edward, MD. Staff Surg. R.N. (1).
 Norbury T. C. N. Col. late 6th Dr. Gds.
 *Norcock, Charles J. Lieut. R.N. (1).
 Norcop, W. J. Lieut. R.N. (1).
 Norcott, Wm. S. R., CB. Major-Gen. (1).
 Norman, C. B. Capt. late B. S. C. (1).
 Norman, Henry Lieut. late 10th Hussars
 Norman, Sir H. W., KCB. Major-Gen. (1).
 *Norris, G. G. Capt. 2nd Warwick Mil. (1).

North, J. S. D. Col. late Q.O.L.I. Mil. MP.
(11.)

North, *Hon.* W. H. J. Lieut. Oxford Yeo.
late 1st L. Gds. (11.)

Northey, E. R. Capt. late 52nd L. I. (11.)

Northey, W. B. Lt.-Col. late Cold. Gds. (11.)

*Northumberland, The DUKE of Lt.-Col.
North. Mil.

Norton, G. C. G. Lieut. 2nd W. I. Rgt. (11.)

Nott, A. H. Capt. late I. N.

Nugent, Andrew Col 2nd R.N.B. Drs. (11.)

Nugent, C. B. P. N. H., CB. Col. R.E. (11.)

Nugent, C. E. Lieut. late 43rd L.I.

Nugent, *Sir* G. E., *Bart.* Lt.-Col. late Gr.
Gds. (11.)

Nugent, St. G. M. Col. (11.)

Nuthall, W. F. Maj.-Gen. (11.)

OBBDARD, Harry S. Col. Beng. S. C. (11.)

O'Brien, A. V. Capt. 60th Rifles (11.)

O'Brien, Donatus Capt. late R.S.C.

O'Brien, E. D. C. Capt. R. E. (11.)

O'Brien, J. T. N. Lt.-Col. (11.)

O'Byrne, Robert, FRGS. Navy Agent (11.)

O'Connell, H. Lt.-Col. Mad. S. C. (11.)

O'Connor, J. J. Inspec. of Cape Frontier
Police (11.)

Ogg, G. S. W., MD. Surg. (11.)

Ogilvy, Thomas Col. late 2nd L. Gds. (11.)

O'Hea, J. B. Capt. late 25th K. O. Bor. (11.)

Oldfield, Chas. J. Lt.-Col.

Oldfield, Geo. T. Capt. Rl. Lon. Mil. (11.)

*Oldfield, Richd. Major R.A. (11.)

Oldham, H. H. Capt. 79th Regt. (11.)

Ommanney, F. G. Navy Agent (11.)

Ommanney, F. M. Comr. R.N. (11.)

Ommanney, M. F. Lieut. R.E.

O'Neill, Wm. late Mil. Store Dept. (11.)

Onslow, A. Edw. Lt.-Col. late S. F. Gds.

Onslow, Geo. M. Capt. 20th Hussars (11.)

Onslow, *Sir* W. W. R., *Bart.* Capt. Rl.
Cornwall Rangers, late Lieut. 12th Regt.
(11.)

Ord, *Sir* H. St. G., *Kt.*, CB. Maj.-Gen. R.E.

Ormsby, Geo. F. Capt. late 2nd Dr. Gds. (11.)

O'Rourke, Albert J. Lieut. R.N. (11.)

*Osborne, Eric W. Lt. late 1st W. I. Regt. (11.)

*Ostrehan, E. S. Major Bomb. S. C.

Otway, Charles Maj.-Gen. R.A. (11.)

Otway, W. M. Capt. late 1st Dr. Gds. (11.)

Otway, W. P. Capt. Cold. Gds.

Ouchterlony, T. H. Capt. R.A. (11.)

Outram, A. M. Lt. Rl. Sher. For. Mil. (11.)

*Owen, C. H. Lieut.-Col. R.A. (11.)

Owen, F. H. E. Capt. R.M.A. (11.)

*Owen, G. A. Capt. late 107th Regt. (11.)

Owen, R. E. Lieut. 69th Regt. (11.)

Oxley, J. S. Lt.-Col. 19th Middx. R.V. (11.)

PADDISON, H. Lieut. 43rd Middx. R.V. (11.)

Page, G. H. Col. 47th Depot Brig. (11.)

*Page, S. F. Major late Lon. Sc. R.V. (11.)

Paget, Lord Geo. A. F., KCB. Lt.-Gen.

Col. 7th Dr. Gds. (11.)

Palk, Lawrence H. Lieut. 1st Devon Yeo.

late Lieut. S. F. Gds. (11.)

Palliser, *Sir* Wm., KCB. Maj. (11.)

Palmer, Frederick Lieut.-Col. S. F. Gds.

Palmer, John Capt. R.N. (11.)

Palmer, *Sir* R., *Bt.* Col. (ret.) 2nd L. Gds.

Pamphilon, F. W. Lt. 2nd S. Mid. R. V. (11.)

*Panter, H. G. Major 22nd Regt. (11.)

Pardoe, T. F. Capt. 22nd Regt. (11.)

*Parish, H. Woodbine, CB. Col. late

45th Regt. (11.)

Parke, Wm., CB. Maj.-General (11. 1s.)

*Parker, C. W. Maj. late 4th R. Middx.

Mil. and 69th Regt.

*Parker, F. G. S. Major 54th Reg. (11.)

Parker, Rich. Lt.-Gen. Col. 5th Dr. Gds. (11.)

Parker, R. J. H. Capt. R.E. (11.)

Parkinson, C. F. Lt.-Col. 9th Regt. (11.)

Parkinson, F. F. Lieut. 17th Regt. (11.)

Paribby, Wm. Gen. Col. 21st Hus. (11.)

Parnell, A. Major, R.E. (11.)

Parnell, *Hon.* H. W. Lt. late R.N. (11.)

Parnell, W. H. Lieut.-Col. Gr. Gds.

Parratt, J. E. T., MD. I. G. of Hospa.

Parsons, Clifford Major 3rd Buils (11.)

Parsons, Wm. Comr. R.N. (11.)

Pasley, *Sir* T. Sabine, *Bart.*, KCB. Adm. (11.)

Patchett, W. Gordon Lt. 2nd W.I. Regt. (11.)

Paterson, H. W. Capt. 2nd W.I. Regt.

(11.)

Patterson, David Aikman Major Paym.

21st Fusiliers (11.)

Patterson, W. T. L. Col. late 88th Regt. (11.)

Pattison, Rowles Capt. late 40th Middsex.

R.V. (11.)

Patton, John Lt.-Gen. Col. 47th Regt. (11.)

*Payn, Wm., CB. Maj.-Gen. Unatt. (11.)

Paynter, John Capt. (ret.) S. F. Gds.

Peacock, Geo. Master R.N. (11.)

Pead, Leonard W. Capt. Suffolk Mil.

Art. (11.)

Pearce, Fras. G. Paym. R.N. (11.)

Pearse, Cosmo B. Capt. late Gren. Gds. (11.)

Pearse, Geo. G. Lieut.-Col. R.A. (11.)

*Pearson, C. K. Lieut.-Col. 3rd Buils (11.)

Pearson, M. B. Capt. 2nd Mid. Art. V. (11.)

Pearson, R. L. O. Col. (rer.) Gr. Gds.

Peel, Cecil Lennox Lt.-Col. late S.F. Gds.

(11.)

Peel, *Right Hon.* Jonathan, MP. Lieut.-Gen.

Peel, J. Floyd Capt. late S. F. Gds.

Pemberton, R. C. B. Major R.E. (11.)

Pennant, *Hon.* A. H. D. Lt.-Col. late Gr. Gds.

Pennafather, R. Don. Lt.-Col. E. Kent Mil.

Pennafather, R. P. Capt. K.E. (11.)

*Pennethorne, L. P. Capt. K.A. (11.)

Pennington, Edward War Office (11.)

Penny, Stapleton Major R.A. (11.)

Penrhyn, Lord E. G. D. Col. Comt. Royal

Carnarvon Rifle Corps

Peploe, D. Peploe Major 1st Heref. R.V. (11.)

Perceval, Jno. J. Lt. (ret.) 17th Regt. (11.)

Perceval, Spencer Lieut.-Gen.

Perceval, George A. Capt. Gr. Gds. (11.)

Percy, Hugh M., LORD, *W. C.*, KCB. Lt.-Gen.

Perry, Lionel F. Lieut. R.A. (11.)

Petre, John Barney Capt. late 1st Drs. (11.)

*Petrie, Martin Lt.-Col. (h.p.) 97th Regt.

(11.)

*Peyton, Francis Col. late 98th Regt. (11.)

Peyton, T. G.	Major Heref. Mil. (11.)	Preston, W. H.	Lieut. 73rd Regt. (11.)
Phayre, R., CB.	Brig.-Gen. Bom. S. C.	Price, Arthur	Paymaster R.N. (11.)
ADC. to the Queen (11.)		Price, Edward, CB.	Maj.-Gen. R.A. (11.)
Philips, Alex.	Capt. R.N. (11.)	Price, G. E.	Comr. R.N., MP. (11.)
Philips, Geo.	Major R.E.	Prichard, A.	Maj.-Gen. (11.)
*Philips, George	Major 4th Hussars (11.)	Prickett, Thos.	Capt. 56th Regt. (11.)
Phillimore, Wm. Brough	Capt. late Gr. Gds.	Prior, H. W.	Lieut. 51st Regt. (11.)
Phillips, Sir B. T.	Maj.-Gen. (11.)	Pritchard, G. D.	Col. R.E. (11.)
Phillips, L. Guy	Lt.-Col. Gr. Gds. (11.)	Probyn, Sir D. M.	Maj.-Gen., G.C. KCSI.
Phillips, R. N.	Major-Gen.	CB. (11.)	
Philipps, Paul Winsloe	Col. R.A.	Protheroe, M.	Capt. M. S. Corps (11.)
Phillipotts, W. C.	Lieut.-Col. R.E.	Prowse, J. F.	Comr. R.N. (11.)
*Philip, Francis L.	Capt. late 2nd R.N.B.	Puckle, Alfred D.	Capt. Lon. Sc. R.V. (11.)
Drs. (11.)		Pugh, Horace, J. M.	Lieut. R.N. (11.)
Philpot, H. J.	Late Surg. Brecon Mil. (11.)	Pullen, W. J. S.	Rear-Adm. (11.)
Phipps, C. E.	Capt. 18th R. Irish (11.)	Purdon, H. G.	Lieut. 64th Regt. (11.)
Phipps, R. W.	Major R.A. (11.)	Purvis, J. C.	Capt. R.N. (11.)
Pidecock, Henry H. F.	Lt. 103rd Regt. (11.)	Pye, Kellow Chas.	Capt. R.E. (11.)
Pidecock, Thomas	Paymaster R.N.	Pym, Francis	late Lieut. 1st Life Guards
Piers, C. B.	Major and Paymaster R.A.	(11.)	
Pierson, W. Henry	Capt. R.E. (11.)	Pym, Samuel	Capt. R.A. (11.)
Pigott, H. de R.	Col. 70th Regt. (11.)	QUICK, George,	Engineer R.N. (11.)
Pilgrim, Chas.	Capt. Bucks Yeo. (11.)		
Pillieu, H. G.	Capt. R.E. (11.)	RADCLIFFE, H.	Lt.-Col. 39th Middx.
Pitcher, Duncan G.	Capt. Ben. S. C. (11.)	R.V. (11.)	
Playfair, W. M.	Capt. 107th Regt. (11.)	Radcliffe, R. P.	Col. R.A. (11.)
*Plummer, H.	Major 7th R. Fus. (11.)	Raikes, P. B.	Major R.A. (11.)
Plunkett, R. H. W.	Lieut. R.A. (11.)	Raitt, E. R.	War Office (11.)
Pocklington, E. B.	Lieut. 52nd Regt. (11.)	Ralston, W. C.	Capt. late 46th Regt. (11.)
Pocklington, E. H. F.	Major-Gen.	Ramsay, B. D. W.	Major (11.)
Pocklington, F.	Major 5th Fus. (11.)	Ramsbotham, John	late Lt. R. Sussex Mil.
*Pocklington, G. H.	Lt.-Col. late 18th R.I.	(11.)	
*Pole, C.V.N.	Lt.-Col. late Cape M.R. (11.)	Ramsden, W. J. F.	Lt.-Col. Cold. Gds. (11.)
Pole, Edward	Lt.-Gen. Col. 12th Lancers	Randall, Alfred	Capt. 13th L.I. (11.)
Polkinghorne, Stewart	Lt. R.M.L.I. (11.)	Randolph, Chas. W.	Col. late Gr. Gds. (11.)
Pollard, Chas.	Col. R.E. (11.)	Randolph, Edmd.	Lieut. 69th Regt. (11.)
Ponsonby, Hon. A.J.G.	Capt. late Gr. Gds.	*Randolph, G. G., CB.	Rear-Adm. (11. 10s.)
*Pooley, H.	Capt. 3rd Ches. Art. V. (11.)	Rasch, F. Carne	late Lt. 6th Dr. Gds. (11.)
Pope, James S.	late War Office	*Ratcliff, C. Lt.-Col.	late 1st War. R.V. (11.)
Pope, W. Agnew	late Lt. 1st Beng. F. (11.)	Rawes, W. W.	Lieut. R.A. (11.)
Popham, Brunswick	Adm. (11.)	*Rawlins, John	Major 48th Regt. (11.)
Porter, Whitworth	Col. R.E. (11.)	Ray, A. E.	Maj. 3rd Mid. Art. V. (11.)
Porteous, David Scott	Lt. 2nd R.N.B. Drs.	Rayner, W. S.	Capt. 5th R. Lanc. Mil. (11.)
(11.)		Read, Constantine	Lt.-Col. (h.p.) R.S.C. (11.)
Porteous, F. P.	Lieut. 24th Regt. (11.)	Read, C. C.	Surg. Cold. Gds.
*Portman, Hon. W. H. B.	Col. late West	Read, John M.	Capt. late 13th L. Inf. (11.)
Som. Yeo. MP. (11.)		Read, Philip	Capt. 19th Middx. R.V. (11.)
Pote, C. St. Clair	Capt. 4th Regt. (11.)	Reade, C. E.	Comr. R.N. (11.)
Potgieter, C. F.	Dep. Controller (11.)	Ready, C.	Lt.-Col. (ret.) 55th Regt. (11.)
Powell, C. F.	Capt. Beng. S. C. (11.)	*Ready John T.	Capt. 66th Regt. (11.)
Powell, R. A., CB.	Rear-Adm.	Reamsbottom, Alfred	Capt. 82nd Regt. (11.)
Powell, Thomas H.	Capt. late S. F. Gds.	Redmond, J. P., CB.	Col. (11.)
Power, Sir W. T. J., KCB.	Com. G.-in-Chief	Reece, Fredk. L. C.	Lieut. R.N. (11.)
Powys, Hon. Charles J. Fox	Maj. 69th Regt.	Reed, Sir T., GCB.	Gen. Col. 44th Regt.
Powys-Keck, H. L.	Lt. Leicester Yeo. (11.)	(11.)	
Powys-Keck, T. B.	late Lt. 60th Rifles (11.)	Reeve, Ellis P. F.	Lt.-Col. late Cold. Gds. (11.)
Pratt C. Stewart.	Capt. 34th Ben. N.I. (11.)	Reid, A. T.	Major Bombay S. C. (11.)
Pratt, Lord G. M.	Capt. (ret.) Gr. Gds. (11.)	Reid, D.	Lieut.-Col.
Pratt, Robert, CB.	Maj.-Gen. (11.)	Reid, P. Savile G.	Lieut. R.E. (11.)
Pratt, Sir T. Simpson, KCB.	Gen. Col.	Reid, Sylvester	Lieut. 11th Regt. (11.)
37th Regt.		Reid, Wm. W.	Capt. St. Kitt's H. Art. (11.)
Prattent, F. M.	Capt. R.N. (11.)	Reidhaven, Visc.	late Lieut. 1st Life Gds.
Prescott, A. S. K.	Surg. Major R.A. (11.)	(11.)	
Preston, A. T.	Lieut. R.E. (11.)	Reilly, W. E. M., CB.	Col. R.A. (11.)
Preston, B. H.	Major M.S.C. (11.)	Rennie, J., CB.	Capt. late I. N. (11.)
Preston, F. W. H.	Lt. 49th Middlesex Rifle	Renny, Henry, CSI.	Lt.-Gen. (11.)
Volunteers (11.)			

- Rentzsch, G. H. Assist.-Surg. 1st Middx. Art. Vols. (11.)
 Reynardson, C. B. Lt.-Col. Gr. Gds. (11.)
 Ricardo, Horace Capt. Gr. Gds.
 Richards, W. H. late Lieut. R.N. (11.)
 Richardson, J. S. Lt.-Col. N.S.W. Local Forces (11.)
 Richardson, W., CB. M.-Gen. late Indian Army (11.)
 Richmond, H. T. Lt.-Col. S. O. P. (11.)
 Rickards, A. W. L. Lt. 1st R. Scots Regt. (11.)
 Ricketts, Geo. T. late Lt. 5th Dr. Gds. (11.)
 *Riddell, H. S. Hutton Lt. 60th Rifles (11.)
 Ridgway, Alex. Maj. late 1st Devon Mil. (11.)
 Ridgway, T. G. Army Agent (11.)
 Ripley, Thos. G. F. late Ord. Dep. (11.)
 Ripon, MARQUIS of (11.)
 Roberts, H. C. Dep. Lieut.
 Roberts, C. P. Major R.A.
 Roberts H. B. Col. late R.M.A. (11.)
 Roberts, Wm. Col. 5th Fusiliers (11.)
 Robertson, Rev. Arch. late 51st Regt. (11.)
 Robertson, D. Maj. 44th Mad. N.I. (11.)
 Robertson, Murray Capt. W. Kent M. (11.)
 Robertson, R. S. Capt. Beng. S.C. (11.)
 Robertson, W. John Lieut. R.A. (11.)
 Robertson, W. Lt.-Col. late 1st R. E. Mid. Mil.
 Robertson, W. Maj. Mad. S. C. (11.)
 *Robinson, C. W. Major Rifle Brigade (11.)
 Robinson, F. C. B. Capt. R.N. (11.)
 *Robinson, G. C. Maj. late 17th Lanc. (11.)
 Robinson, H. A. Capt. 16th Lancers (11.)
 Robinson, Sir Hercules G.R. Kt. (11.)
 Robinson, Henry Capt. R. E. (11.)
 Rochford, J. D. Capt. late R. Lanc. R. (11.)
 Rodd, John B. Capt. R.N. (11.)
 *Roe, E. M. Capt. 23rd R. W. Fus. (11.)
 Roe, Herbert F. Paymaster, R.N. (11.)
 Roe, W. C. Staff Surgeon (11.)
 *Rogers, E. Capt. S.O.P. (11.)
 *Rogers, J. E. V. Capt. 102nd R. M. Fus.
 Rokeby, H. Lord, GCB. Gen. Col. 77th Regt. (11.)
 Rollo, Hon. R., CB. Major-Gen. (11.)
 Rolls, H. J. Lt. 3rd Middx. Art. V. (11.)
 Romer, R. Frank Gen. R.A.
 Romilly, F. W. Lt. Scots Fus. Gds. (11.)
 Romney, EARL of late Lt. E. Kent Yeo. (11.)
 Rooper, C. J. T. Major Flint Mil. (11.)
 Rose, Henry Comr. R.N. (11.)
 Rose, H. Cooper, MD. Surg. Royal East Middlesex Militia (11.)
 Rose, W. M. Ens. (ret.) 32nd Regt. (11.)
 Ross, Albert E. Maj. 5th Fus. (11.)
 Ross, J. C. Capt. R.E. (11.)
 Ross, John, CB. Brig.-Gen. late Rifle Brig. (11.)
 Ross, W. H. Maj. Bombay S. C.
 Ross of Bladensburg, J. F. G. Lieut. Cold. Gds. **Gold Medalist, Military Essay, 1877** (11.)
 Rosser, George Lieut. late 17th Lanc. (11.)
 Rotton, Arthur Lieut.-Col. late R.A. (11.)
 *Roupell, C.M. Capt. Inns of Court R.V. (11.)
 *Rouse, Rolla Major late Suffolk R.V. (11.)
 Rowe, Samuel, CMG. MB. Surg.-Maj. (11.)
 Rowley, C. J. Capt. R.N. (11.)
 Rowsell, E. P. late Capt. Lon. R.V. (11.)
 Ruddell J. A. Col. 25th K. O. Bords.
 Ruddiman, T. Capt. (ret.) M. Army (11.)
 Rumley, Randal Lieut.-General (11.)
 Rushout, Sir C. F. R., Bart. Capt. (ret.) R. H. Gds.
 Russell, Cecil H. Maj. Inns of Court R.V. (11.)
 Russell, Sir Charles, Bart., &c. Lt.-Col. (ret.) Gr. Gds. MP.
 Russell, LORD Chas. Jas. Fox Lt.-Col. late 60th Rifles
 Russell, Christopher J. Capt. R.E. (11.)
 Russell, Charles R. T. Comr. R.N. (11.)
 Russell, Sir D., KCB. Lieut.-Gen. (11.)
 Russell, LORD Edward, CB. Adm.
 Russell, Godfrey Maj. late Shropshire Mil. (11.)
 Russell, Hon. Geo. W. G. late Lt. 9th Lan. (11.)
 *Russell, J. C. Maj. 12th R. Lancers (11.)
 *Rutley, J. L. Capt. 2nd Mid. Art. V. (11.)
 Rycroft, C. A. W. Lieut. Hants Yeo.
 Rycroft, Sir N., Bart. Capt. Hants Mil. (11.)
 Ryder, Alfred P. Vice-Adm. (11.)
 Ryley, Frank Lieut. 81st Regt. (11.)
 SABINE, Sir Edw., KCB. DCL. FRs. Gen. Col. Comm. R.A. (11.)
 Sadler, S.W. Paymr.-in-Chief R.N. (11.)
 Sainsbury, C. H. S. Capt. late 91st Regt. (11.)
 St. Clair, J. L. C. Lieut. 91st Highlrs. (11.)
 St. George, Sir J., KCB. Lt.-Gen. R.A. (11.)
 St. John E. B. Capt. (h.p.) 73rd Regt. (11.)
 Salis-Schwabe, Geo. Capt. 6th Dr. Gds. (11.)
 Salmon, Nowell, &c. Capt. R.N. (11.)
 Salmond, Wm. Capt. R.E. (11.)
 Saltoun, Alex. LORD Lt.-Col. late Comm. Aberdeen Mil. (11.)
 *Salisbury, Fred. O., CB. Maj.-Gen. (11.)
 Salwey, Alfred Dep. Com.-General
 Samson, A. M. W. Major late 1st W.I. Regt. (11.)
 Sandhurst, W., LORD Lieut. Cold. Gds. (11.)
 Sandilands, Philip H. Major R.A. (11.)
 Sands, W. H. Capt. 6th W. Y. Mil. (11.)
 *Sandwith, J. H. Lt. R.M.L.I. (11.)
 Sandys, Edwin W. Capt. R.A., Adj. Forfar and Kincardine Mil. (11.)
 Sankey, M. H. P. R. Lieut. R.E. (11.)
 Sankey, Wm., CB. Maj.-Gen. (11.)
 Sargent, J. N., CB. Col. (h.p.) 3rd Buffs (11.)
 Sartorius, Sir George Rose, KCB. Adm. of the Fleet (11.)
 Sartorius, E. H. Capt. 59th Regt.
 Sartorius, G. C. Capt. Ben. S. C.
 Sartorius, R. W., &c. CMG. Maj. 6th Bengal Cav.
 Satterthwaite, B. A. Lieut. 81st Regt. (11.)
 Saunders, Arthur A. Capt. R.A. (11.)
 Saurin, E. Admiral (11.)
 Savile, Albany R. Capt. 18th R. I. (11.)
 Savory, H. B. Capt. (h.p.) 78th Highlrs. Adj. Roy. Lon. Mil. (11.)
 Sawyer, C. Col. late 6th Dr. Gds. (11.)
 Sawyer, G. W. Capt. Bomb. S. C.

(11.)	Saxe Weimar, H. S. H. PRINCE Wm. Augustus Edward of, CB. Major-General (11.)	Shirley, Sir Horatio, KCB. Lieut.-Gen. (11.)
(11.)	Sayer, J. R. S., CB. Col. late 3rd Drag. Gds. (11.)	Shuckburgh, Sir G. T. Francis, Bart. Maj. late S. F. Gds.
(11.)	Scarlett, Leopold J. Y. C. Capt. S. F. Gds. (11.)	Shute, C. C., CB. Major-Gen. MP. (11.)
(11.)	Schaw, H. Lt.-Col. R.E.	Shute, Neville H. Col. late 64th Regt. (11.)
(11.)	Schomberg, G. A., CB. Lieut.-Gen. (11.)	Siborne, H. T. Lt.-Col. R.E. (11.)
(11.)	Sconce, G. C. Lieut. late I. N. (11.)	Sibthorp, C. C. W. Capt. late 1st Drs.
(11.)	Scot, P. G. Col. 36th Bengal N.I. (11.)	Sich, Arthur J. Capt. 2nd Middx. R.V. (11.)
(11.)	Scott, A. de C. Major R.E. (11.)	Silk, Geo. C. Lieut. late S. Middx. R.V. (11.)
(11.)	Scott, Hon. Chas. Grantham late Col. S. F. Gds.	Sillery, Charles Col. (ret.) 30th Regt. (11.)
(11.)	Scott, C. H. S. Major Beng. S.C. (11.)	Silver, Hugh A. Lt.-Col. 9th Essex R.V. (11.)
(11.)	Scott, Right Hon. Lord Charles T. M. D. Capt. R.N. (11.)	Sim, C. A. Capt. R. E. (11.)
(11.)	Scott-Douglas, J. H. Lt. 21st Royal North British Fusiliers (11.)	Sim, E. C. Major R.E. (11.)
(11.)	Scott, E. W. S. Major-Gen. R.A. (11.)	Simkins, J. G. Lt. 2nd Middx. Mil. (11.)
(11.)	Scott, F. D. Sibbald Lieut. R.N. (11.)	Simpson, Cortland H. Capt. R.N. (11.)
(11.)	Scott, Geo. T. Capt. 2nd R.N.B.Drs. (11.)	Simpson, D. Lieut.-Gen. Beng. Army (11.)
(11.)	Scott, H. B. late Lt.-Col. (h.p.) 9th Regt. (11.)	Simpson, Frank Staff Assist. Surg. (11.)
(11.)	Scott, Hen. Young D. Maj.-Gen. (ret.) R.E.	Simpson, G. W. Y. Maj.-Gen. R.A. (11.)
(11.)	Scott, R. A. E. Capt. R.N. (11.)	Simpson, R. Hamilton Major late Paym. 33rd Regt.
(11.)	Scott, Sir Sibbald David, Bart. Capt. late R. Sussex Mil. Art. (11.)	Sinclair, Clarence G. Sub-Lieut. Unatt. (11.)
(11.)	Scott, T. A. Capt. Beng. S.C. (11.)	Sinclair, the Hon. the Master of Col. late 57th Regt. (11.)
(11.)	Scott, William Capt. late 1st R. Drs. (11.)	Singer, Morgan Capt. R.N. (11.)
(11.)	Scott, W. C. E. Capt. late 100th Regt. (11.)	Singleton, John Maj.-Gen.
(11.)	Scourfield, J. A. P. Capt. 12th R. Lan. (11.)	*Sitwell, H. C. Capt. 91st High. (11.)
(11.)	Scovell, E. W. Col. late 96th Regt.	Sitwell, H. S. Capt. R.E.
(11.)	Scriven, A. G. Lieut. 52nd Reg. (11.)	Skinner, P. K. M., CB Lieut.-Gen. (11.)
(11.)	Scriven, Horace W. Maj. 4th Middx. Mil., Capt. late 25th K. O. Borders.	Skinner, T. H. Capt. 1st W. York Militia, Lieut. (ret.) 8th or King's (11.)
(11.)	Seafield, J. C., EARL of late R.N.	Skinner, Thos. Major late Ceylon Rifles (11.)
(11.)	Seaman, W. C., MD. D.I.G. of Hosps. (11.)	Skipton, S. S. MD. Surg. 25th Regt.
(11.)	Seecombe, John Rear-Admiral (11.)	*Skirne, H. Capt. 43rd Middx. R.V. (11.)
(11.)	Seddon, H. C. Major R.E. (11.)	Skrine, H. M. Maj. Som. Rifle Vols. (11.)
(11.)	Sedgwick, Leonard Lt. R. Flint Mil. (11.)	Slack, James Lt.-Adj. Sc. of Musk. (11.)
(11.)	Sefton, W. P., EARL of late Capt. Gr. Gds. (21.)	Slade, Charles G. Major Rifle Brig. (11.)
(11.)	Selwyn, Jasper H. Rear-Adm. (11.)	Sladen, Joseph Capt. (11.)
(11.)	Seton, J. L. Capt. (ret.) 102nd L.I. (11.)	Slingsby, T. Capt. (ret.) R. H. Gds. (11.)
(11.)	Seton, W. C. Capt. (ret.) 82nd Regt. (11.)	Sloggett, W. H. D.I. Gen. of Hospitals and Fleets (11.)
(11.)	Sewell, J. H. Lieut. 15th Hussars (11.)	Smith, Astley C. Major (ret.) 25th K.O. Borderers (11.)
(11.)	*Sewell, T. D. Capt. R. Lond. Mil. (11.)	Smith, C. B. Lucie Maj. Mad. S.C. (11.)
(11.)	Sexton, M. J. Capt. R.A. (11.)	Smith, Carlton Maj. 1st R. Surrey Mil. (11.)
(11.)	Seymour, LORD A. C. Capt. Sc. F. Gds. (11.)	Smith, Edwd. Capt. 40th Middx. R.V. (11.)
(11.)	Seymour, Sir Francis, Bart., KCB. Lt.-Gen.	Smith, Edwd. L. Capt. N. Durhan. Mil. (11.)
(11.)	*Seymour, F. Beauchamp P., CB. Vice-Adm.	Smith, Felix V. Capt. late 2nd Dr. Gds.
(11.)	Seymour, F. H. A. Major Rifle Brigade	Smith, Gerard Lieut.-Col. late S.F.Gds. (11.)
(11.)	Seymour, Leopold R. Lt.-Col. late Gr. Gds. (11.)	Smith, H. Fowle, MD. D. Surg. Gen. (11.)
(11.)	Seymour, LORD W. F. E. Lieut.-Col. Cold. Gds. (11.)	Smith, Hy. Porter Lt. (h.p.) Rifle Brig. (11.)
(11.)	Shakerley, Sir Charles W., Bart. Lt.-Col. 5th Batt. Cheshire R.V. (11.)	Smith, James Webber, CB. Lieut.-Gen.
(11.)	Sharpe, Benjamin Comr. R.N. (11.)	Smith, Jervoise Major late R. Edmonton Rifles
(11.)	Shaw, William Capt. 2nd Stafford Mil. (11.)	Smith, Joshua Simmonds Maj.-Gen. (11.)
(11.)	Sheffield, Sir Robt., Bart. Major (ret.) R.H. Gds.	Smith, J. H. Col. R.E. (11.)
(11.)	Shelley, Charles Col. (ret.) S. F. Gds.	Smith, M.W., CB. Lt.-Gen. Col. 20th Hus. (11.)
(11.)	Sherson, Alex. Nowell Capt. (11.)	*Smith, Percy G. L. Major R.E. (11.)
(11.)	Shervinton, C. B. Lieut.-Col. (11.)	Smith, P. H. Lieut. 11th Regt. (11.)
(11.)	Shirley, James C. Capt. 100th Regt. (11.)	Smith, Rob. M. Major R.E. (11.)
(11.)		Smith, Thomas Charlton Lt.-Gen. (11.)
(11.)		Smith, W. Major R.A. (11.)
(11.)		Smith, Wm. Lea Lt. (h.p.) 13th L.I. (11.)
(11.)		Smith, W. Sidney Adm.
(11.)		Smyth, E. G. Selby Lieut. 86th Reg. (11.)
(11.)		Smyth, E. Selby Maj.-Gen. (unatt.) (11.)
(11.)		Smyth, G. J. F. Lt.-Col. Cold. Gds. (11.)
(11.)		Smyth, Henry, CB. Lieut.-Gen. (11.)

Smyth, Henry Augustus	Col. R.A. (11.)	Stewart, John D. H.	Capt. 11th Hus. (11.)
Smyth, H. F.	Capt. R.A. (11.)	Stewart, J. H.	Col. R.M.L.I. (11.)
Smyth, J. H., CB.	Maj.-General R.A. (11.)	Stewart, Hon. R.H. Capt. (h.p.)	42nd High. (11.)
Smyth, James S.	Capt. 17th Regt.	Stewart, R. McG.	Capt. R.A. (11.)
Smyth, Wm. Jas., R.A. FRS. MRSA.	Maj.-Gen.	Stewart, R. C.	Col. (h.p.) 2nd Regt.
Somerset, Edw. A., CB.	Col.	Stewart, Hon. Walter J.	Capt. 12th R. Lanc. (11.)
Sondes, G. W. Lord,	Lieut.-Col. East Kent Yeo.	Stewart, W. Houston, CB.	Rear-Adm. (11.)
Sotheby, Sir Edwd. S., KCB.	V.-Adm. (11.)	Stirling, Francis	Capt. R.N. (11.)
Sparks, E. T. B.	Lieut. 98th Regt. (11.)	Stirling, J. S.	Lieut.-Col. R.A. (11.)
Sparks, R. W.	Major 7th R. F. (11.)	*Stirling, W.	Lieut.-Col. R.A. (11.)
Spashott, A. E.	Lieut. R.M.L.I. (11.)	Stock, H. J.	Capt. Bom. S.C. (11.)
Spearman, H. R.	Capt. Beng. S.C. (11.)	*Stocker, M. E. C.	Major R.A. (11.)
*Spencer, Hon. J. W. S.	Rear-Adm.	Stoddard, Thomas H.	M.-General (11.)
Spencer, Hon. R. C. H.	Col. (ret.) R.A.	Stoker, W. Beauchamp	Capt. 2nd W.I. Regt. (11.)
Spencer, R. H.	Lieut. 2nd Drag. Gds. (11.)	Stokes, Alfred	Capt. late 38th Regt. (11.)
Spencer-Stanhope, F. W.	Lt. 13th Regt. (11.)	*Stone, Cecil P.	Capt. 16th Regt. (11.)
Spicer, R. W.	Capt. late 16th Lancers	Stone, George H.	Lieut.-Col. R.A. (11.)
Sprague, F. P.	Lieut. R.E. (11.)	*Stoney, F. S.	Major R.A.
Sprot, John	Col. (h.p.) 91st Highlrs. (11.)	Stopford, Horace R.	Lieut. Cold. Gds. (11.)
Stacey, W. J.	War Office (11.)	Stopford, Richard H.	Vice-Adm. (11.)
Stafford, P. P. Leslie	Major M. S.C.	Storer, Arthur T.	Major R.E. (11.)
Stair, J. EARL of Capt. late S. F. Gds. (11.)		Stourton, Marmaduke	Capt. 63rd Regt.
Stallard, Wm.	Major 1st Wore. Art. V. (11.)	Stracey, Henry H. D.	Lt.-Col. S. F. Gds.
Stanhope, Philip S. Gen. Col. 13th L.I. (11.)		Strahan, William	Major R.A. (11.)
*Stanhope, Walter T. S.,	Capt. 1st W. York Yeo. MP. (11.)	*Strange, Tom Bland	Lt.-Col. R.A.
Stanley, C. E. H.	Lt.-Col. Gr. Gds. (11.)	Strangways, W. A. F.	Lt.-Col. R.A.
Stanley, Edw.	Lieut. 2nd W.I. Regt. (11.)	Strathmore, EARL of	Lt. late 2nd L. Gds.
Stanley, F. S.	Lt. Hants Yeo. late R. H. Gds. (11.)	Strickland, Edw., CB.	Dep. Com. Gen. (11.)
Stanley, Hon. Fred. A.	Lt.-Col. 1st Lanc. Mil., late Capt. Gr. Gds. MP. (11.)	Stuart, Charles	Gen. Col. 46th Regt. (11.)
Stanley, Hans Sloane	Lt. (ret.) 16th Lancers (11.)	Stuart, Geo. B., MB.	Surg. Army Med. Dep. (11.)
Stanley, Hon. J. C.	Lt.-Col. (ret.) Gr. Gds. (11.)	Stuart, J. F. D. Crichton	Lt.-Col. (ret.) Gr. Gds. MP. (11.)
Stapleton, F. G.	Capt. (ret.) 33rd Regt.	Stuart, Wm. Jas.	Lt.-Col. R.E. (11.)
Stapleton, Hon. Miles Capt. Cold. Gds. (11.)		Stuart, W. T.	Capt. Beng. S.C. (11.)
Stapylton, G. G. C. Col. (h.p.) 32nd L.I. (11.)		Stucley-Stucley, Sir George, Bart.	Lieut.-Col. late Devon Mil. Art. (11.)
Staunton, Geo., CB.	Lieut. Gen. Col. 92nd Highlrs.	Studd, Edward	Major-Gen.
Statham, H.	Major 33rd Lanc. R.V. (11.)	Studdert, R. A. FitzGerald	Capt. Lond. Art. V. (11.)
Staveley, Edmund	Major R.A. (11.)	Sturt, C. N.	Col. late Gr. Gds. MP. (11.)
Stawell, Geo. D.	Lieut. 11th Regt. (11.)	Sturt, N. G.	Capt. R.E. (11.)
*Stawell, W. St. L. Alcock	Lt.-Col. N. Cork Rifles (11.)	Sullivan, G. L.	Capt. R.N. (11.)
Stebbing, F. A.	Capt. (h.p.) 8th Regt. (11.)	Sullivan, G. A. F.	Col. (ret.) 5th R. I. Lan.
Steele, Aug. F.	Col. (11.)	Suttie, James Grant	Lt.-Col. Haddington Mil. Art. (11.)
Steele, Sir T. Montague, KCB.	Lt.-Gen. (11.)	Swaine, L. V.	Capt. Rifle Brig. (11.)
Steevens, N.	Lieut.-Col. (11.)	Swann, Jno. S.	Capt. late 22nd Regt. (11.)
Stephen J. Grant	Major R. Lanc. Mil. Art.	Sweny, G. A.	Capt. 7th Fus. (11.)
Stephens, Cecil J. Lt. (ret.) 12th R. Lanc. (11.)		*Swindley, J. E.	Lt.-Col. 15th Hussars (11.)
Stephens, Edmund	Capt. R.E. (11.)	*Swiney, G. Clayton	Capt. 32nd L.I. (11.)
Stephens, F. S. M. Capt. 2nd R. Middx. Mil.		*Swinfen, F. H.	Lt.-Col. (h.p.) 5th Dr. Gds.
Stephenson, Chas. Capt. 22nd Mid. R.V. (11.)		Symes, W. Alex.	Capt. 71st Highlrs. (11.)
Stephenson, F. C. A., CB.	Maj.-Gen. (11.)	Symonds, C. E. H.	Lieut. late R.A. (11.)
Stepney, Sir John Cowell, Bart., KH.	Lt.-Col. late Cold. Gds. MP. (11.)	Symonds, R. J.	Lieut. R.N. (11.)
Sterling, John B.	Lt.-Col. Cold. Gds. (11.)	Symonds, T. E.	Capt. R.N. (11.)
Stevens, Stephen J.	Lieut. 90th Regt. (11.)	TAAFFE, C. R.	Lieut. 16th Lancers (11.)
Stevens, Wm.	Major (h.p.) 2nd or Queen's	Talbot, C. R. M., MP.	Dep. Lieut.
Stevenson, R. A.	Major R.A. (11.)	Talbot-Harvey, W.	Maj. late Suffolk Art. Mil. (11.)
Stevenson, W. G.	Lieut. late S. F. Gds.	Talbot, Hon. R. A. J.	Capt. 1st L. Gds. (11.)
Stewart, Hon. Alex.	Major R. Art. (11.)	Talbot, Hon. W. L.	Lt.-Col. late 21st Fus. (11.)
		Tandy, Dashwood G.	Comr. R.N. (11.)
		Tanner, Edward	Major, 8th or King's

- Tanqueray, C. Waugh Capt. Lon. Scot. R.V. (11.)
 (11.)
 Tate, Jas. Roddam Paym. R.N. (11.)
 Tatham, Edward, C.B. Rear-Adm. (11.)
 Tatham, W. I. Lieut. R.A. (11.)
 Tattall, R. C. Capt. R.N. (11.)
 Taylor, Alex., CB. Maj.-Gen. R.E. (11.)
 Taylor, Brook Lt.-Gen. Col. 2nd W. I. Regt.
 Taylor, *The Rev.* H. A., MA. late Chaplain
 to the Forces
 Taylor, *Sir* H. G. A., GCB. Gen. (11.)
 Taylor, J. L. du P. Lt.-Col. 49th Middx.
 R.V. (11.)
 Teasdale, W. Lt. late 1st W. York Art. V
 Teck, F., *H.S.H.* Drake, GCB. Hon.
 Col. Surrey Art. V. (11.)
 Tempest, Thos. R. P. Col.
 Templer, C. B. Lieut. late I. N. (11.)
 Templeton, J. M. Maj. Victoria R.V. (11.)
 Templetown, Viscount, K.C.B. Gen.
 Col. Comm. 60th Rifles (11.)
 Tennyson, Julius Capt. late 17th Regt. (11.)
 Terry, A. F. Capt. 60th Rifles (11.)
 *Terry, Frederick S. Major 25th Regt. (11.)
 Terry, H. D. Lieut. 9th Regt. (11.)
 Teschemaker, T. R. Maj. (ret.) R.A. (11.)
 Tew, Cyril B. Capt. 15th Regt. (11.)
 Thackeray, E. T., *W.C.* Major R.E. (11.)
 Thellusson, A. G. B. Major late Cold. Gds.
 Thelwall, E. D. Lt.-Col. late R.M.A. (11.)
 Thesiger, *Hon.* Fred. A., CB. Brig.-Gen.
ADC. to the Queen (11.)
 *Thesiger, *Hon.* C. W. Col. 6th Drs. (11.)
 Thomas, C. D. Lt.-Col. Cold. Gds. (11.)
 Thomas, H. J. Col. (ret.) R.A. (11.)
 Thomas, J. W., CB. Col. (11.)
 Thomas, Montagu Capt. R.N. (11.)
 *Thomas, Wm. H. Capt. 1st Surrey R.V. (11.)
 Thompson, C. H. Capt. R.A. (11.)
 Thompson, Henry Maj. Ben. S. Corps (11.)
 Thompson, J. C. Capt. 26th Middx. R.V. (11.)
 Thompson, J. H. Lieut. 2nd W. I. Regt. (11.)
 *Thompson, P. S., CB. Col. late 14th Hus. (11.)
 Thompson, W. H. Capt. 1st King's Drag.
 Gds. (11.)
 Thomson, C. F. Capt. 7th Hus. (11.)
 Thomson, Harry Gen. (11.)
 Thornton, C. E. Major late S.O.P. (11.)
 Thornton, E. Z. Capt. 4th Regt. (11.)
 Thornton, Harry G. Lt.-Col. late Gr. Gds.
 (11.)
 Thorold, Cecil, late Capt. 1st L. Gds. (11.)
 Thuillier, H. L., CSI. Col. R.A. (11.)
 Thurlow, E. H. Lieut. 60th Rifles (11.)
 Thurlow, H. H. Lt. 13th L.L. (11.)
 Thursby, Jas. L. Maj. (ret.) 17th Regt. (11.)
 Thursby, Rich. H. Lt.-Col. late Cold. Gds.
 Thurston, W. French Hon. Asst. Surg. 3rd
 Middx. Art. Vols. (11.)
 Thynne, Alfred W. Lt.-Col. late Gr. Gds. (11.)
 Thynne, Reginald T. Lt.-Col. Gr. Gds. (11.)
 Tipper, H. Roe Capt. 6th T. Hain. R.V. (11.)
 Tippetts, A. M. Surg. 5th Fus.
 Tipping, Alfred Lt.-Col. late Gr. Gds.
 Tipping, H. T. G. Lieut. R.N. (11.)
 Todd, J. A. Lt.-Col. late 14th Hus. (11.)
 Todd, T. Fentham Capt. 62nd Regt. (11.)
 Toke, J. L. Major 1st Berks R.V. (11.)
 Toler, James O. Lieut. 74th Highs. (11.)
 Tollemache, W. A. Capt. late 2nd L. Gds.
 Tomline, G. Col. N. Lincoln Mil. MP.
 Tomline, Wm. Capt. late 10th Huss. (11.)
 Tompkins, John Paymaster R.N. (11.)
 *Tompson, H. S. Capt. and Adj. 2nd Stafford
 Mil. (11.)
 *Tompson, W. D. Major 17th Regt. (11.)
 Tongue, J. M. Gurnell Capt. 24th Regt. (11.)
 Torrens, J. A. W. O. N. Lieut. 2nd R.N.B.
 Dragoons (11.)
 Torriano, C. E. Lt.-Col. R.A. (11.)
 *Tottenham, C. J. Hon. Col. Denbigh Yeo.
 (11.)
 Tottenham, H. L. A. Maj. 38th Beng. N.I. (11.)
 Toulmin, A. late H. F. I.C.S. (11.)
 Toulmin, Alfred H. late Lt. 65th Regt. (11.)
 Tower, Arthur Lieut. 95th Regt. (11.)
 Towneley, Richard H. late Lt. 2nd L. Gds.
 (11.)
 Townsend, Samuel P. Capt. R.N. (11.)
 Townshend, H. D. Gen. Col. 25th Regt. (11.)
 Tracy, *Hon.* C. Hanbury late Lt. R.N. MP. (11.)
 Tracey, Harry A. Major R.A. (11.)
 Travers, E. A. Sub-Lieut. 25th Regt. (11.)
 Travers, James, *W.C.* CB. Lieut.-Gen. (11.)
 Treffry, Fred. Asst. Paym. Control. Dep. (11.)
 *Trefusis, *Hon.* W. R. Lt.-Col. S.F. Gds. (11.)
 Tremayne, A. Lt.-Col. late 13th Lt. Drs. (11.)
 Trench, C. Major R.A. (11.)
 Trench, *Hon.* C. G. Capt. late 1st R. Drs.
 (11.)
 Trench, Frederick C. Capt. 20th Hus. (11.)
 Trench, *Hon.* W. Le Poer Major R.E. (11.)
 *Trevelyan, H. A. Col. late 7th Hussars
 Trevelyan, H. Lieut. 32nd Regt. (11.)
 Trevor, E. A. Capt. R.E. (11.)
 *Trevor, W. C., CB. Col. 54th Regt. (11.)
 Trevor, W. S., *W.C.* Lt.-Col. R.E. (11.)
 Trimmen, Richard Capt. late 35th Regt. (11.)
 Trist, Wm. S. G. Lieut. 2nd W. I. Regt. (11.)
 Tritton, F. B. Lt.-Col. (ret.) 18th Regt.
 Tritton, H. J. Capt. 25th Surrey R.V. (11.)
 Trivett, J. F. Lieut. R.N.R. (11.)
 Trollope, *Sir* C., KCB. Lt.-Gen. Col. 53rd Regt.
 Trotter, H. Lt.-Col. Gr. Gds. (11.)
 Trotter, Henry Capt. R.E. (11.)
 Trousdell, W. G., MD. D. I. G. of Hosps. (11.)
 Trousdell, W. B. P. Lt. late 7th Hus. (11.)
 Troyte, Chas. A. W. Maj. 1st Devon R.V. (11.)
 Tryon, George, CB. Capt. R.N. (11.)
 Tubby, J. H. Assist. Com.-Gen. (11.)
 Tuite, Hugh Manley Maj.-Gen.
 *Tulloch, Alex. B. Capt. 69th Regt. (11.)
 Tulloh, Alex., CB. Gen. (11.)
 Tully, Thos. Capt. 28th Middx. R. V. (11.)
 Tupper, A. E. de Vic Major R.A. (11.)
 Tupper, C. W. Capt. late K.O.L.I. Mil.
 Tupper, De Vic Lt.-Col. late 8th or King's (11.)
 Tupper, G. Le M. Col. R.H.A. (11.)
 Turbervill, T. P. Lieut.-Col. R.A. (11.)
 Turnbull, C. F. A. Lieut. 32nd Regt. (11.)
 Turnbull, H. J. L. Lieut. R.A. (11.)
 Turnbull, J. F. Col. Canadian Hus. (11.)
 Turnbull, J. R. Lt.-Col. late 1st R. Drs. (11.)
 Turner, A. E. Capt. R.H. Art. (11.)

- Turner, Geo. H. Capt. 17th Regt.
 Turner, T. Capt. 26th Regt. (11.)
 Turner, W. Webb Capt. 3rd Sussex Art. V. (11.)
 Turquand, W. M. G. Capt. late Cold Gds. (11.)
 Tweeddale, MARQUIS of Lieut.-Col. late Gren. Guards.
 Twemlow, Edw. D'O. Capt. R.E. (11.)
 Twemlow, F. R. Lieut. 3rd Staf. Mil. (11.)
 Twemlow, Geo. Lt.-Gen. Col. Comm. R.A. (11.)
 Twentyman, A.C. Capt. 4th King's Own (11.)
 *Twyford, H. R. Lt.-Col. Hants R. Vols. Capt. late 36th Regt. (11.)
 Tylee, Alfred Col. (ret.) R.A. (11.)
 Tynte, Mervyn C. S. Capt. 4th Dr. Gds. (11.)
- UPTON, Hon. Arthur General (11.)
 Underwood, A. G. Capt. 36th Middlesex R.V. (11.)
 Underwood, P. C. Lieut. R.N. (11.)
 Utterson, A. H. Major 17th Regt. (11.)
- VACHER, F. S. Lt.-Col. (11.)
 Vandeleur, C. T. B. Capt. late 12th Lancers (11.)
 Vandeleur, T. B. Capt. 7th R. Fus. (11.)
 Vander-Meulen, J. H. Capt. 35th Regt. (11.)
 Van-Huythuyzen, G. Capt. 14th Regt. (11.)
 Van-Straubenzee, T. Lt.-Col. R.A. (11.)
 Varlo, Henry Capt. (h.p.) R.M. L.I.
 Vassall, Rawdon J. P. Lieut.-Gen. (11.)
 Vaughan, H. B. Maj. (11.)
 Vaughan, J. F. Lt.-Col. R. Mon. L. I. M.
 Vaughan, J. L., CB. Maj.-Gen. (11.)
 Venner, L. S. Lt.-Col. (11.)
 Vereker, T. G. Major
 Verity, C. F. Capt. 2nd Middx. R.V. (11.)
 Verney, Sir Harry, Bart. Major late Gr. Gds. MP. (11.)
 Vernon, G. A. Lieut.-Col. late Cold. Gds.
 Vernon, Hon. Geo. W. H. Lieut. Scots Fus. Gds. (11.)
 *Vesey, G. H. Maj.-Gen. late R.A. (11.)
 Vickerman, W. J. Capt. 36th Middx. R.V. (11.)
 *Vickers, C. B. Lt.-Col. 2nd Middx. R.V. (11.)
 Vidal, Chas. J. Capt. R.N. (11.)
 Villiers, Hon. G. P. H. Capt. Gr. Gds. (11.)
 *Vincent, C. E. H. Lt.-Col. 40th Middlesex R.V., late 23rd R.W. Fus. Capt. late Rl. Berks Mil. (11.)
 Voules, W. J. Capt. late 7th Fus. (11.)
 Voyle, G. E. Major-Gen. R.A. (11.)
 Voyle, F. R. C. Capt. Beng. S.C. (11.)
 Vyner, R. C. de Grey Capt. (ret.) Gr. Gds. (11.)
 Vyse, G. Howard Col. (ret.) 2nd L. Gds.
- WACE, R. Capt. R.A. (11.)
 *Wade, Hamlet Coote, CB. Col. (11.)
 Wahab, G. D. Capt. 20th Regt.
 Wahab, H. J. Maj. Paym. 48th Regt. (11.)
 *Wake, A. J. Major R.A. (11.)
 Wake, R. W. Lt.-Col. (h.p.) R. Afr. Corps
 Wake, Rev. Henry J. late Lt. 2nd Drs.
 Walhouse, Edward Capt. (ret.) 12th Regt.
 Walker, A. G. Lieut. R.A. (11.)
- Walker, C. P. Beauchamp, CB. Maj.-Gen. (11.)
 Walker, D. Corrie Major R.E. (11.)
 Walker, F. W. E. F. Lt.-Col. S. F. Gds. (11.)
 Walker, G. F. Lieut.-Col. 12th Regt. (11.)
 *Walker, G. G. Lt.-Col. Scottish Borderers Mil. (11.)
 Walker, Sir Geo. R., Bart. Capt.
 Walker, Henry C. Lieut. R.N. (11.)
 Walker-Mylne, Hercules Lieut.-Col.
 Walker, John Capt. late 66th Regt. (11.)
 Walker, John B. Capt. R.A. (11.)
 Walker, Robt. Capt. Lon. Rifle Brig. (11.)
 Walker, S. Lt.-Col. late Q. O. L. Inf. Mil.
 Walker, W. Capt. late 69th Regt. (11.)
 Walker, W. L. Lt.-Col. (ret.) Indian Army (11.)
 *Walkey, R. Capt. R.A. (11.)
 Wallace, Chas. J. S. Maj.-Gen.
 Wallace, James Lt. 72nd Highl. (11.)
 Wallace, N. W. Capt. 60th Rifles (11.)
 Wallace, W. A. J. Capt. R.E. (11.)
 *Waller, Geo. H. Col. 7th R. Fus. (11.)
 Waller, S. Lieut. R.E. (11.)
 Walpole, Horatio J. T. Capt. Rifle Brig. (11.)
 Walsh, Hon. A., MP. Capt. late 1st L. Gds.
 *Walton, C. E. Dep. Com. (11.)
 Walwyn, Jas. H. Capt. 23rd R. W. Fus.
 Wandesford, C. H. B. C. Lt. late Gr. Gds. (11.)
 Ward, Edw. Wolstenholme, CMG. Col. R.E. (11.)
 Ward, John Lt.-Col. late 91st Highlrs.
 Ward, John Ross Rear-Adm. (11.)
 Ward, J. W. Lt. 8th or King's (11.)
 *Ward, Thos. Le H. Capt. R.N. (11.)
 Ward, Hon. W. J. Capt. R.N. (11.)
 Warde, C. A. M. Lieut.-Col. late R.A. (11.)
 Warde, Sir E. C., KCB. Lieut.-Gen. (11.)
 Warde, Sir Francis, KCB. Lieut.-Gen. Col. Comm. R.A. (11.)
 Warden, Robert, CB. Maj.-Gen. (11.)
 Wardlaw, Robt., CB. Maj.-Gen. (11.)
 Waring, Walter T. Capt. Kent Art. (11.)
 Warner, Wynyard H. Capt. late 101st Regt. (11.)
 Warre, F. Lieut. late E. Kent Militia
 Warre, Hy. J., CB. Maj.-Gen. (11.)
 Warren, Charles Capt. R.E. (11.)
 Warren, William Capt. R.A. (11.)
 Warton, R. G. Lieut. 10th Regt. (11.)
 Watson, A. J. Lieut. 12th Regt. (11.)
 Watson, C. E. Lt.-Col. (ret.) 18th R.I. (11.)
 Watson, C. M. Lieut. R.E. (11.)
 Watson, D. Maj.-Gen. (11.)
 Watson, F. G. D. Capt. I. of W. Art. Mil. (11.)
 Watson, G. L. Lt. (ret.) 1st L. Gds. (11.)
 Watson, Henry W. Lieut. late R.E. (11.)
 Watson, H. J. Capt. 1st King's Dragoon Guards (11.)
 Watson, T. C. Lt. late 75th Regt. (11.)
 *Watts, J. G. Major Bom. S. C. (11.)
 Waugh, Sir A. Scott, Kt., FRs. Major-Gen. R.E. (11.)
 Wavell, A. G. Lieut. 9th Regt. (11.)
 Wavell, A. H. Maj. 41st Regt. (11.)
 *Waveney, Lord Col. Suffolk Mil. Art. ADC. to the Queen (11.)
 Weatherley, F. A. Capt. (ret.) 6th Drs.
 Webb, Francis E. Capt. 28th Regt.

- Webb, Theodosius Capt. late R.E.
 Webb, W. F. Lt. late 17th Lancers (11.)
 Webber, C. E. Major R.E. (11.)
 Webster, G. M., MD. Staff Surg.
 Webster, Robt. G. Capt. 4th Royal Lanc.
 Mil. (11.)
 Wegg-Prosser, F. R. Maj. 1st Mid. Art. V.
 (11.)
 Wegg-Prosser, J. F. Lieut. Rifle Brig. (11.)
 Welby, A. C. E. Capt. 2nd R. N. B. Drgs.
 (11.)
 Weldon, F. Major Madras Staff Corps (11.)
 Wellesley, Arthur C. Capt. Gr. Gds. (11.)
 Wellesley, Hon. F. A. Lt.-Col. Cold. Gds. (11.)
 Wellesley, G. G., CB. Adm. (11.)
 Wellesley, W. H. C. Col.
 Wells, Richard Capt. R.N. (11.)
 Welsh, D. I. Major R.A. (11.)
 West, James B. Capt. R.N.
 West, Hon. M. S. Capt. late Gren. Gds.
 Westbury, R. L. P. LORD Lieut. Scots Fus.
 Gds. (11.)
 Westby, A. G. Capt. (ret.) 8th or King's
 Westby, B. C. Capt. 16th Regt. (11.)
 Westby, B. H. Capt. (h.p.) 16th Regt. (11.)
 Westloe, F. H. Lt. 106th Regt. (11.)
 Westmacott, Spencer Col. R.E.
 Wethered, E. R. Major Paym. R.A. (11.)
 Wetherall, W. A. Lieut. Bo. S. Corps (11.)
 Whaley, Hen. Lieut. North York Rifles (11.)
 Whalley, J. L. Capt. 1st R. Lanc. Mil., Maj.
 4th Ad. Brigade Lanc. Artillery Vols. (11.)
 Wharncliffe, E. M. G. LORD Lt.-Col. late
 1st W. York Yeo. late Lt. Gr. Gds.
 Wheatley, Wm. Lt.-Col. (ret.) S. F. Gds.
 Wheeler, J. Ross Lt.-Col. (ret.) 29th Regt.
 Wheeler, J. S. Capt. 8th or King's (11.)
 Whiffen, H. W. S. late War Office (11.)
 Whimper, F. A., CB. Maj.-Gen.
 Whinfield, C. W. Capt. R.E. (11.)
 Whish, C. F. D. late Lt. 85th Regt. (11.)
 Whitaker, G. T. Capt. 60th Rifles (11.)
 Whitbread, J. W. Capt. late Suffolk Art.
 White, A. Lt. late Queen's West. R.V. (11.)
 *White, C. H. Capt. and Adj. Cheshire Mil.
 (11.)
 White, Chas. W. Lt. West Kent Mil. (11.)
 *White, David Lieut. R.N.R. late Indian
 Navy (11.)
 White, F. B. P. Capt. 1st W.I. Regt. (11.)
 White, H. D., CB. Major-Gen. (11.)
 White, R. H. Col. S. F. Gds. (11.)
 White, W. Lambert Capt. 4th E. Y. Art.
 Vols. (11.)
 Whitehead, F. G. Col. Com. Essex Rifles (11.)
 Whitehorne, A. H. Lieut. R.A. (11.)
 Whitehouse, Alfred Paymtr. R.N. (11.)
 Whitelocke, G. F. Lt.-Col. late Ben. Army (11.)
 Whittle, W. Major 10th Regt. (11.)
 Whitmore, E. A., CB. Col. (11.)
 Whitwell, John Lt.-Col. 1st Westm. R.V.
 MP. (11.)
 Whyte, W. H. Capt. R.N. (11.)
 *Wickham, E. H. Capt. R.A. (11.)
 Wigram, J. R. Capt. late Cold. Gds. (11.)
 Wilbraham, Sir Rich., KCB. Lt.-Gen. (11.)
 Wildbore, Fred. Asst.-Surg. late Cold. Gds.
 Wildman, C. W. Capt. 87th Regt. (11.)
 Wildman, John Col. (11.)
 Wilkins, Joseph W. Lieut. R.N. (11.)
 Wilkinson, E. H. Commr. R.N. (11.)
 Wilkinson, F. G. Maj.-Gen. (11.)
 Wilkinson, G. A. Col. R.A. (11.)
 Wilkinson, H. C. Lt.-Col. 16th Lanc. (11.)
 Wilkinson, H. G. Lt.-Col. late S. F. Gds.
 Wilkinson, Josiah Major 105th Regt. (11.)
 Willan, L. P. Commr. R.N. (11.)
 Willes, Aug. Capt. late 104th Fus.
 Willes, Geo. O., CB. Rear-Adm. (11.)
 Williams, D. W. Lt.-Col. Madras Army (11.)
 Williams, E. A., CB. Col. R.A.
 Williams, J. Aubrey late Lt. 60th Rifles (11.)
 Williams, J. W. C. Col. R.M.A. (11.)
 Williams, L. Major 5th W. York Mil. (11.)
 *Williams, O. L. C. Col. R. H. Gds.
 Williams, Sir Wm. Fenwick, Bart., of Kars,
 GCB. Gen. Col. Commr. R.A. (11.)
 Williams, W. Major late 103rd Fus. (11.)
 Willock, G. W. Capt. 3rd Beng. Cav. (11.)
 Willock, John H. Capt. R. Lon. Mil. (11.)
 Wilmot, Francis Capt. 16th Regt. (11.)
 Wilmot, F. M. Eardley, FRS. Major-
 Gen. R.A. (11.)
 Wilmot, Sir Hen., Bart., V.C. Lieut.-Col.
 Derby R.V. MP. (11.)
 Witmot, Sydney, M. E. Lieut., R.N. (11.)
 Wilmot, W. A. Eardley Capt. 5th Fus. (11.)
 *Wilson, Charles T. Capt. late 4th King's
 Own, Capt. 7th Lanc. Mil. (11.)
 Wilson, C. W., Major R.E. FRS. (11.)
 Wilson, C. W. H. Capt. 6th R. Regt.
 Wilson, Fitz-Roy Capt. Rifle Brigade (11.)
 Wilson, Fred. W. Capt. R.N. (11.)
 Wilson, Geo. H. Lieut. 26th Regt. (11.)
 Wilson, H. B. Capt. 71st L.I. (11.)
 Wilson, J. C. Capt. R.N. (11.)
 Wilson, J. J. Lieut.-Col. R.E. (11.)
 *Wilson, John Major late 42nd High. (11.)
 *Wilson, S. W. F. M. Col. late 18th R.I. (11.)
 Wilson, T. M. Lt.-Gen. (11.)
 *Wilson, W. H. Capt. 43rd Regt. (11.)
 Windsor-Clive, Hon. G. H. W. Lt.-Col.
 (ret.) Cold. Gds. MP. (11.)
 Wingfield, Digby H. R. Capt. late R. H. Gds.
 Wingfield, F. Dep. Asst. Com.-Gen. (11.)
 Winmarleigh, Right Hon. LORD Col. 3rd
 Lanc. Mil., ADC. to the Queen
 Wigram, Theodore Col. late 6th Dras. (11.)
 Wise, Aug. Capt. 2nd Warwick Mil. (11.)
 Wombwell, A. Lt.-Col.
 Wood, Elliott Lt. R.E. (11.)
 *Wood, Henry Major Rifle Brig.
 Wood, H. G. Col. 8th or King's
 Wood, H. W. Major R.E. (11.)
 Wood, J. Andover Major (h.p.) Madras
 Army (11.)
 Wood, Patrick Major 9th Essex R.V. (11.)
 Wood, Wm. MARK Lt.-Gen.
 Woodall, J. W. Major late E. and N.
 York. Art. Mil. (11.)
 Woodford, Sir J. G., KCB. KCH. Gen. (11.)
 Woodhead, H. Navy Agent
 Woodhouse, A. P. Capt. 69th Regt. (11.)
 Woodrow, Alex. K. Lieut. R.N. (11.)

Woods, Wm. Fell	Capt. late 40th Mid. R.V.	XIMENES, W. R.	Capt. (ret.) 8th or King's (11.)
(11.)			
Woodward, John	Capt.	YARBOROUGH, EARL of	late Captain
Woodward, W. W.	Maj. R.H.A. (11.)	R. N. Lincoln Mil. (11.)	
Woolsey, O'B. B.	Col. R.A. (11.)	Yarmouth, EARL of	Capt. late Gr. Gds.
Worcester, H. A. W. F., MARQUESS of	Capt. R. H. Gds. (11.)	(11.)	
Worsley, Francis	Capt. late I. of W. Mil. (11.)	Yates, H. Peel	Col. R.A. (11.)
Worsley, G. F.	Major R.A. (11.)	Yolland, W.	Col. late R.E. (11.)
Wray, Henry	Col. R.E. (11.)	*Yonge, G. N. K. A.	Col. (11.)
*Wright, A. F. B.	Capt. 101st Regt. (11.)	Yonge, W. L.	Lieut.-Col. R.A. (11.)
Wright, C. J.	Lt.-Col. 1st Notts. R.V. MP. (11.)	Yorke, Sir Charles, GCB.	Gen. Col.
		Rifle Brigade (11. 10s.)	
*Wright, D.	Surg. Ben. S.C. (11.)	Yorke, J., CB.	Lieut.-Gen. (11.)
Wright, H. O. P.	Lieut. R.M.L.I. (11.)	*Yorke, P. C.	Capt. 4th King's Own Regt. (11.)
Wright, William H.	Lt. R.A. (11.)	Yorke, Philip S.	Capt.-Col. 12th Ben. Cav. (11.)
Wrottesley, Hon. Geo.	Col. R.E. (11.)	Young, Chas. Allen	Major
Wyatt, H. F. J.	Lieut. R.N. (11.)	Young, J. S.	Dep.-Commissary (11.)
Wyatt, Sir Matthew	late Lt. Hon. Corps of Gentlemen-at-Arms (11.)	Young Richard R.	Lt. 73rd Regt. (11.)
Wygram, Godfrey J.	Lt.-Col. Cold. Gds.	Young, S. S.	Maj. 39th Middx. R.V. (11.)
Wyndham, W. G. C.	Lieut. 21st Hus. (11.)	Young, Thos.	Maj. (ret.) 37th Regt. (11.)
Wynne-Finch, C.A.	Lt.-Col. S.F. Gds. (11.)	Youngusband, C. W.	Col. R.A.
Wynne, E. W. L.	Col. Gr. Gds.		
Wynne, G.	Lt.-Gen. R.E. (11.)		
Wynyard, E. G.	Major-Gen. (11.)		

LIST OF LIFE MEMBERS.

ACHESON, *Hon. E. A. Brabazon* Lt.-Col.
Cold. Gds. (91.)

Acland-Troyte J. E. Lieut. 4th King's
Own Regt. (91.)

Acland, W. A. D. Lt. R.N. (91.)

Adair, H. A. Capt. (ret.) 52nd L.I. (91.)

Adeane, E. S. Capt. R.N. (91.)

Airey, J. M. C. Comr. R.N.

Airey, J. T., CB. Major-Gen.

Aitchison, H. C. Comr. R.N. (91.)

Alcock, T. St. L. Hon. Col. R. E. Mid. Mil. (31.)

Aldham, W. C., CB. Vice-Adm. (31.)

Alexander, R. Lt.-Gen. Col. 24th Mad. N.I.
(31.)

Alexander W. Gordon Major 93rd Highlrs.
(91.)

Allen, J. L. Dep.-Lt. Perthshire

Alleyn, Douglas Maj. 37th Regt. (91.)

Alt, W. J. Capt. 15th Surrey R.V. (91.)

Alves, W. L. Lieut. R.A. (91.)

Anderson, A. Dunlop Capt. Beng. S. C. (91.)

Andoe, Hilary G. Comr. R.N. (91.)

Arbuthnot, C. R. Lieut. R.N. (91.)

Archer, Clement R. Capt. late 4th Dr. Gds.

Archer, G. W. Capt. R.E. (91.)

Armstrong, Sir Alexander, KCB. LLD.

FRS., *Director-General Medical Department of the Navy* (91.)

Armstrong, T. Maj. late 2nd W. I. Regt.

Arnold, Stanley Capt. Royal Lanc. Art.

Mil. (91.)

Arthur, Albert F. Lieut. R.N. (91.)

Ashmore, Chas. Gen. Col. 30th Regt.

Astley, F. D. Lieut. Scots Fus. Gds. (91.)

Atkinson, T. Capt. (ret.) 1st Royals (10s.)

Austin, Thomas Colonel late 69th Regt.

Aylmer, F. C. Col. (91.)

Aylmer, H. Major-Gen. R.A. (31.)

BABBAGE, Henry P. M.-Gen. Unatt. (91.)

Bacon, Sir H. B., Bart. Lt. G. Gds. (91.)

Baddeley, F. H. Maj.-Gen. R.E.

Badgley, W. F. Capt. Ben. S. C. (91.)

Bagot, C. Col. 3rd K.O. Staff. Mil., late Gr.

Gds.

*Bagot, George Col. late 69th Regt. (91.)

Baillie, Hugh S. Lieut. R.N. (91.)

Baldock, W. Lt. late Rifle Brigade

*Balfour, C. James Capt. R.N.

Balfour, F. W. Major late Rifle Brig. (91.)

Balfour, Sir Geo., KCB. Lt.-Gen. R.A.M.P. (31.)

Balfour, R. F. Lt.-Col. Gren. Guards. (91.)

Barclay, A. K. Capt. late Sur. Yeo.

Barclay, D. W. Capt. late 90th L.I.

Barlow, G. Maj. late 4th Royal Lanc. Mil.

Barstow, R. H. Dep.-Lt. Cheshire

Barreto, *The Baron*, FRSL. Capt. late 4th
R. S. Middx. Mil. (91.)

Barstow, John A. Maj. late 89th Regt. (91.)

Bartley, J. Cowell Maj.-Gen.

*Barton, Edward Capt. 27th Regt.

Barton, R. J. Capt. Colds. Gds. (91.)

*Bateaman, H. W. Capt. 31st Regt. (91.)

Bates, C. Ellison Capt. Bengal S. C. (91.)

Bayfield, H. W. Admiral

Bayley, J. A. Maj. late 52nd Regt. (91.)

Baylis, E. W. D. Capt. 36th

Middx. R. V., FRGS. (91.)

*Baylis, T. Henry Major 36th Middx.

R. V. QC. (91.)

*Baylis, T. Erskine Capt. R. Elthorne M.

(91.)

Bayly, Geo. Cecil Capt. R.A. (91.)

Bayly, John, CB. Col. R.E. (10s.)

Bayntun, W. H. Capt. late 12th Lancers

Beadon, George Capt. R.N.

Beamish, Cauld. F. Capt. late 45th Regt. (91.)

Beauchlerk, Rt. Hon. LORD Amelius W.

Capt. R.N.

Beaumont, Lewis A. Comr. R.N. (91.)

Beazley, Geo. G. Major 83rd Regt. (91.)

Bedford, DUKE OF Lieut. late S. F. Gds.

Bell, Chas. Wm. late Lt. 15th Hus.

Bell, Mark S., V.C. Capt. R.E. (91.)

Beresford, C. E. de la P. Lt. 46th Regt. (91.)

Beresford, W. H. Capt. late Rifle Brig.

Best, Hon. Henry late Mid. R.N. (91.)

Best, T. C. H. Major (ret.) 72nd Highls.

(91.)

Betty, J. F. Major R.A. (91.)

Bewicke, Calverley T. Lieut. R.N. (91.)

Biddulph, M. W. Lieut. 5th Fus. (91.)

Bidwell, J., FSA. late Lt. Queen's R.V.

Bingham, G. W. P., CB. Major-Gen.

Birch, George F. Major Hants Mil. (91.)

Birch, Lightwood T. Lieut. the King's Own

1st Stafford Mil. (91.)

Black, B. West Major-Gen. R.A. (91.)

Black, James Scott Capt. late 11th Hus. (91.)

Black, William late Mid. R.N.

Black, W. T. Surg.-Major (91.)

Blackwood, Sir Francis, Bt. Comr. R.N.

(91.)

Blair, W. Fordyce Capt. R.N.

Blake, Wm. G. Capt. 3rd W. York Mil. (91.)

Bland, F. Maltby late Mid. R.N. (91.)

Blanshard, Rich. late Lieut.-Govr.

of Vancouver's Island

Blundell, H. B. H. Lt.-Col. Gr. Gds. (11.)

Boileau, C. L. Major late Rifle Brigade (11.)

Bonamy, John Lt.-Col. (ret.) 6th Regt.

Bonhote, John Lieut. late 84th Regt. (91.)

Borland, Oswald	Capt. R.N.	*Bythell, R.	Major. Bo. S. C. (91.)
Borton, Arthur, CB.	Lieut.-Gen.	*Bythesca, J., <i>W.C.</i>	Capt. R.N. (91.)
Boulderson, Samuel	Major 17th Lanc. (91.)	CAMBRIDGE, H.R.H. GEORGE W.F.C.	
Bourbel, Le Marquis de	Lt.-Col. R. E. (91.)	DUKE OF, KG. GCB. GCMG. Field-Marshal Commanding-in-Chief, PRESIDENT OF THE INSTITUTION (91.)	
Bourchier, Jas. J.	Maj. (ret.) 52nd L.I. (91.)	*Cadman, W. E.	
Bourke, Paget J.	Capt. R. Body Guard (91.)	Major 5th W. York Mil. (91.)	
Bourne, Jas. Col. Commt. R. Lanc. Art. Mil. MP. (91.)		Caldwell, Charles B.	Capt. late 66th Regt.
Bousfield, N. Major 1st Lanc. R.V. MP. (91.)		Caldwell, W. C.	Capt. late 47th Regt. (31.)
Boustead, John	Army Agent (31.)	Calvert, A. M.	Lieut.-Col. R. A. (91.)
*Bowden-Smith, Nath.	Capt. R.N. (91.)	Call, C. F.	Lieut. R.E. (91.)
Bowler, J. H.	Comdt. Cape Mounted Police (91.)	Campbell, A. J.	Lt.-Col. late 16th Regt.
Boyd, Arch. D. Capt. 1st R.E. Mid. Mil. (91.)		Campbell, Archibald	Col. late 46th Regt.
Brandreth, Thomas	Capt. R.N. (91.)	Campbell, D. L.	Lieut. late 9th Lancers
Branfill, B. A.	Major late 86th Regt. (91.)	Campbell, H. J. F.	Comr. R.N. (91.)
Branson, C. E. D.	Capt. H.M.I.M.F. (91.)	Campbell, Robert	Comr. R.N. (31.)
Brassey, T.	Capt. Cinque Ports Art. Mil. MP. (91.)	Cannon, Edward St. Leger	Vice-Adm.
Bray, G. F. C.	Lt.-Col. 96th Regt. (91.)	Cannon, Frederick	Capt. R.N.
Breton, H. W.	Gen. Col. 56th Regt. (31.)	Carey, Le Marchant	Capt. late 66th Regt.
Breton, Peter Wright	Capt. Hants Mil. (91.)	Carey, W.	Major R.A. (91.)
Breton, W. H.	Comr. R.N. (31.)	Cargill, John	Lt.-Col. Otago V. (91.)
Bright, R. O. B., CB.	Maj.-Gen.	Carington, C. R., LORD	Capt. R. H. Gds. (91.)
Brigstocke, G.C.H.P.	Capt. late 4th Dr. Gds.	Carlyon, T. F.	Capt. 76th Regt. (91.)
Brocas, Bernard	Lt. late 6th Dr. Gds.	Carmichael, G. Lynedoch	Lt.-Col. late 95th Regt.
*Brodigan, F.	Major 28th Regt. (91.)	Carpenter, C.	Comr. R.N. (31.)
Brook, G. S.	Ord. Storekeeper	Carr, Henry J.	Comr. R.N. (91.)
Brooke, Charles K.	Capt. 15th Regt. (91.)	Carr, R. E.	Major 36th Regt. (91.)
Brooshooft, E. A. D.	Lt.-Col. 4th E. York. Art. V. (91.)	Cavan, P. C.	Lt.-Col. late 30th Regt. (91.)
Brown, James	Comr. R.N. (91.)	Cave, Lawrence Trent	Capt. late 54th Regt. (31.)
Brown, J. C.	Capt. R. Lanc. Art. Mil. (91.)	Chadwick, Osbert	Lieut. late R.E. (91.)
Brown, R., FRS. FLS.	late Surgeon Scotch Fencible Regt.	Chalmers, P.	Capt. late 3rd Dr. Gds.
Brown, Sir W. R., Bart.	Col. 1st Lanc. Art. V. (91.)	Chaloner, Thomas	Vice-Adm. (31.)
Brown, W. E.	Lieut. 15th Regt. (91.)	Chamberlain, Henry	Lieut. R.N. (91.)
Browne, Augustus	Lt. R.A. (91.)	Chamberlaine, W. C.	Rear-Adm. (91.)
*Browne, H. R.	Col. 63rd Regt. (91.)	Chambers, Montague	late Lieut.
Browne, Ven. Archdn. R. W., MA.	late Chaplain to the Forces	71st High. L.I. Q.C. (91.)	
Browne, W. B.	Ensign late 68th L.I.	Charnpowne, Henry	Capt. R.E. (91.)
Brymer, J.	Capt. late 5th Dr. Gds. (31.)	Charlewood, E. P.	Rear-Adm. (91.)
Buceleuch, Walter F.M. DUKE of, KG. KT. FRS., Lord-Lieut. Co. Mid-Lothian		Chichester, Hon. Aug. G. C.	Col. (91.)
Buckle, Claude E.	Capt. R.N. (91.)	Chichester, Sir Alex. P. B., Bart.	Lieut. Devon. Yeo. (91.)
Buckle, W. Hill	late Lieut. 14th Regt.	Christie, S. Hunter, MA.	late Prof. R.M. Acad.
Bucknill, J. T.	Lieut. R.E. (91.)	Christie, W. J.	Capt. late Gren. Gds.
Bulger, G. E.	Lt.-Col. late 10th Regt. (91.)	Churchill, LORD Alfred	late Lt. 83rd Regt.
Buller, Alexander, CB.	Capt. R.N. (91.)	Clarke, Geo. Calvert, CB.	Major-Gen.
Buller, E.M. M.	Col. (h.p.) Rifle Brigade (91.)	Clarke, H. W.	Capt. R.E. (91.)
Burdett, Francis	Lt.-Col. late 17th Lancers	Clarke, M. de S. M'K. G. A.	Major 50th Regt. (91.)
Burdett, Sir Robert, Bt.	Col. late 68th L.I.	Clayton, Matthew	Capt. late Northum. Yeo.
Burghley, B.H.G.C. LORD	Capt. Gr. Gds. (91.)	Clerk, Godfrey	Lt.-Col. Rifle Brigade (91.)
Burke, W. St. Geo.	Capt. R.E. (91.)	Cleveland, Henry F.	Capt. R.N. (91.)
Burrard, Sidney	Lt.-Col. (ret.) Gr. Gds.	Clinton, H.	Col. (ret.) 11th Huss.
Burriss, E. N.	Lieut. late Ceylon Rifles	Clinton, Hen. R.	Lt.-Col. (ret.) Gr. Gds. (91.)
Burroughs, F. W., CB.	Col. late 93rd Highlrs. (91.)	Close, Geo. C.	Major late 45th Regt. (91.)
Burrows, R. E., KH.	Col. late 66th Regt.	*Clutterbuck, T. St. Quintin	Capt. 29th Punjab Infantry (91.)
Burslem, G. J.	Capt. late 94th Regt.	Cochrane, T. B. H.	Lieut. R.N. (91.)
Butler, H. T.	Maj. 13th Huss. (91.)	*Cockburn, C. F.	Lt.-Col. R.A. (91.)
Buxton, J. W. F.	Lieut. 27th Regt. (91.)	Cockburn, J. P.	late Lt. 1st Warwick Mil. (91.)
		Cocks, Philip Reginald	Col. late R.A. (31.)
		*Codrington, W.	Capt. R.N. (91.)

Coffin, J. Townsend	Adm.	Dennis, James B.	Maj.-Gen. R.A.
Cole, Joshua	Comr. R.N. (91.)	Dennis, M. S. T.	Lt.-Col.
Collett, H.	Major Beng. S.C. (91.)	Dennistown, R. J. W.	Capt. 64th Regt. (91.)
Collings, J. E., CB.	Col. (91.)	Derby, The EARL of, CB.	(91.)
Cologan, J. Fitz-G. F.	Capt. 18th Bengal N.I. (91.)	Derriman, S. H., CB.	Rear-Adm. (91.)
Conroy, H. G.	Col. late Gr. Gds.	De Winton, C. L.	Maj (ret.) 76th Regt. (91.)
Conybeare, Fredk.	Major-Gen. R.A. (91.)	Dicken, H. Perry	Comr. R.N.
Cooke, J. G.	Capt. 7th Lanc. Mil.	Dickins, H. F.	Quar.-Mar. Vict. R.V. (91.)
Cooke, William	Lt. Madras S.C. (91.)	Dickinson, Edwd.	Lieut. R.E. (91.)
Cookes, George	Capt. (31.)	Digby, Hon. E. H. T.	Capt. Cold. Gds. (91.)
Cooper, D. S.	Capt. late 1st Royals	Digby, J. A.	Lt.-Col. late Gr. Gds.
Cooper, Henry	Lt.-Gen. Col. 79th Reg.	Dixon, Matthew	Capt. R.N.
Cooper, J. C.	Capt. (ret.) 8th Regt. (91.)	Domville, W. C. H.	Lieut. R.N. (91.)
Cooper, Leon Morse	Col.	Donovan, E. W.	Maj.-Gen. (91.)
Coote, Robert, CB.	Rear-Adm. (31.)	*Doughty, Chester	Capt. and Adj. Hereford Mil. (91.)
Corbett, William	Major late 52nd L.I.	Douglas, Charles	Col. R.A. (91.)
Corry, Alvin C.	Lieut. R.N. (91.)	Drax, J. S. W. E.	Capt. late E. Kent Mil. MP. (31.)
*Cox, J. W., CB.	Col. (91.)	Drummond, Alf. M.	Capt. late Rifle Brig. (91.)
Craig, John	Col. R. N. Down Rifles (91.)	Drummond, C. G. A.	Capt. late Rifle Brig. (91.)
Craigie, R. W.	Comr. R.N. (91.)	Drummond, Hon. Sir James Robert, KCB.	Vice-Admiral
Crawford, Alex. de C.	Lieut. R.N. (91.)	Dugmore, W. F. J.	Lieut.-Col. (ret.)
Crawford, C.	Capt. R.E. (91.)	S. F. Gds.	
Crawley, H.	Lt.-Col. late 20th Regt. (91.)	Dunbar, John G. H. W.	Lieut. 1st Life Gds. (91.)
Creak, Ettrick W.	Staff Comr. R.N. (91.)	Dundas, P.	Col. late 96th Regt.
Creslock, J. North	Major 95th Regt. (91.)	Dunn, R. G.	Capt. late 9th Regt. (91.)
*Croft, Richard B.	Lieut. R.N. and Capt. Herts Yeo. FRMS. (91.)	Dunlop, Hugh, CB.	Vice-Adm. (31.)
Crofton, John F.	Lt.-Gen. Col. 6th Regt.	Duntze, J. A.	Adm.
Crole, G. S.	Major	*Durrant, Francis	Capt. R.N. (91.)
Cruikshank, J. D.	Capt. R.E. (91.)	Dutton, Wm. Holmes	Col.
Crutchley, Charles	Lieut.-Gen. (31.)	Dyer, S. H.	Capt. (ret.) 8th or King's (91.)
Cunynghame, Sir A. A. T., KCB.	Lieut.-Gen. Col. 36th Regt. (31.)	EDINBURGH, H.R.H., A.E.A., DUKE OF, KG., KT., GCSI. GCMG., Capt. R.N. (91.)	
Cuppaidge, Alex.	Cornet late 4th Dr. Gds.	*Earle, Wm., CSI.	Col. Gr. Gds. (31.)
Curling, J. J.	Lieut. late R.E. (91.)	Ebury, LORD	Capt. late Flint Yeo.
Currie, Wm., of Linthell	Lieut. late	Eden, A. D.	Capt. 26th Regt. (91.)
Edinb. Mil. (91.)		Edgar, the Rev. J. H.	late Lieut. R.A.
Curzon-Howe, Hon. A. G.	Lieut. R.N. (91.)	Edwards, Sampson	Comr. R.N.
Curtis, Herman	Lieut. 1st Mid. Art. V. (91.)	Elgee, Charles	Lt.-Col. 23rd R. W.F. (91.)
Cust, Hon. Sir E., Bart., KCH. KH.	Gen. Col. 16th Lancers (31.)	Elliot, Charles, CB.	Col. late Mad. S.C. (91.)
Custance, H. F.	Col. 1st Norfolk Mil. (91.)	Elliot, Robt.	Comr. R.N. (91.)
D'AGUILAR, H.T.	Lt.-Col. late Gr. Gds.	Elliot, Hon. W. Fitz-William	Lieut. 93rd Highrs. (91.)
Daly, R. T. A.	Lt.-Col. Georgetown Mil. (91.)	Ellis, Arthur E. A., CSI.	Lieut.-Col. Gr. Gds. (91.)
Dalrymple, J. H. N. G. H. VISCOUNT	Lt. R. Horse Gds. (91.)	Ellis, Robert	Capt. late H.A.C.
Dando, A. C.	Capt. R. N. R. (91.)	Elwes, R. H. H. E.	Capt. late 12th Regt.
Daniell, E. S.	Lt.-Col. late 102nd Regt. (91.)	England, W. G.	Comr. R.N. (91.)
Daniell, W. H. M.	Lieut. R.N. (91.)	English, Thomas	Capt. R.E. (91.)
Darwin, Leonard	Lt. R.E. (91.)	Ersine, James E.	Capt. R.N. (91.)
Daubeney, Sir H. C.B., KCB.	Maj.-Gen. (31.)	Evans, T. W.	Dep. Lieut. Derby (91.)
Davidson, J.	Master Royal School of Naval Architects (91.)	*Evelyn, G. P.	Lt.-Col. Comt. 1st R. Surrey Mil. (31.)
Davis, Sir John F., Bart., KCB.	Deputy-Lieut. Gloucestershire (91.)	Eversley, VISCOUNT	Col. Comt. Hampshire Yeo. ADC to the Queen (10s.)
Davidson, Thos.	Capt. 16th Lancers (91.)	Ewart, C. B., CB.	Col. R.E.
Dawe, Charles	Major late 8th or King's	Ewart, David	Col. (ret.) Bengal Art.
Dawney, Hon. Eustace H.	Lieut. Cold. Gds. (91.)	Ewart, J. H.	Lieut. 78th Highrs. (91.)
Dawson, H. C.	late Mid. R.N. (91.)	FABER, W.	Lt. late 14th Lt. Drs.
Dawson, Hon. R. M. W.	Capt. (ret.) 92d Highrs. (91.)	Fairfax, Henry	Capt. R.N. (91.)
Dawson, W.	Capt. R.N. (91.)		
Dawson, W. H. Lt.	6th Inniskilling Drs. (91.)		
Deane, H. C.	Lt. (ret.) 17th Regt. (91.)		

Fane, Charles G.	Capt. R.N. (91.)	Gibbings, Henry Cornwall C.	Lieut. 108th Regt. (91.)
Fanshawe, Edward Gennys, CB.	Adm.	Gibson, R.	Capt. late 28th Regt.
Farmer, W. R. G.	Capt. (ret.) Gr. Gds.	Gibson, J. C. H.	Lt.-Gen. Col. 8th Hus.
Farquhar, Harry R.	Capt. 24th Regt. (91.)	Gifford, G. A.	Lieut. R.N. (91.)
Farquharson, F.	Gen.	Gill, W. John.	Lieut. R.E. (91.)
Farquharson, G. M'B.	Maj.-Gen. Bomb. Staff Corps (91.)	Gillum, W. J.	Lieut.-Col.
Feilden, Henry	Capt. late 21st R.N.B. Fus. (91.)	Gleichen, Victor F. F. E. G. A. C. F.	Comdr. Rear-Adm. (91.)
*Feilden, O. B.	Lt.-Col. 78th High. (91.)	Glen, Archd.	Capt. 10th Regt. (91.)
Feilding, Hon. P. R. B., CB.	Col. Cold. Gds.	Glen, Joseph	Phys.-Gen. (ret.) Bomb. Army
Fergusson, R. C.	Lieut. S. F. Gds. (91.)	Gloag, A. R.	Col. R.A. (91.)
Ferris, John	Lieut. R.N. (91.)	Goddard, A. Lethbridge	Major R. Wills.
Festing, E. R.	Major R.E. (91.)	Yeo. MP.	
*Field, E.	Capt. R.N.	Godfrey, Henry J.	Lieut. R.N. (91.)
Fife, James, G.	Col. R. E. (91.)	Godman, Ch. B.	Lt. R. Sussex L.I. Mil. (91.)
Filliter, Clavell F.	Lt. 2nd W. I. Regt. (91.)	Godman, R. Temple	Col. (h.p.) 5th D. G. (91.)
Fincham, Herbert Geo.	Assist. Comy. (91.)	Godwin, John	Capt. Mil. Kt. of Windsor (31.)
Fishbourne, E. Gardiner, CB.	Vice-Adm. (31.)	Goldie, James	Major 16th Lancers (91.)
Fisher, E. R. Capt. (ret.)	4th R.I. Dr. Gds. (31.)	Goody, E. C.	Capt. 44th W.Y.R. Vols. (91.)
*Fisher, John A.	Capt. R.N. (91.)	Goodenough, F. A.	Capt. late Calcutta Vol. Gds. (91.)
*Fitzclarence, Hon. Geo.	Comr. R.N. (91.)	Gordon, Lord Douglas W. C.	Lieut. Colds. Gds. (91.)
FitzGeorge, A.	Comr. R.N. (91.)	Gordon, G. T.	Vice-Adm.
Fitzgerald, H. C.	Lt.-Col. (31.)	Gordon, S. E., CB.	Col. R.A.
Fitzherbert, W. H. M.	Capt. Rifle Brig. (91.)	Gordon, Wm.	Lt.-Col. late 25th Regt.
Fitzmayer, Sir James W., KCB.	Major-Gen. R.A. (31.)	Gordon, Wm.	Col. Beng. S. C. (91.)
Fitzwygram, F. W. J.	Col. 15th Huss. (31.)	Gordon, W. E. A., CB.	Rear-Adm. (91.)
Fletcher, E. C.	Lieut.-Gen. (31.)	Gore, James A. Major	(h.p.) 71st High. L.I.
Fletcher, Henry M.	Capt. R. London Mil. (91.)	Gorman, W. J.	Capt. late Ceylon Rifles (91.)
Flood, Warden	Capt. late 51st Regt.	Gosset, A.	Maj. (ret.) R.A.
Foley, Hen. Fitzalan C. J.	Lt. 2nd Derby Mil. (91.)	Gosset, M. W. E.	Capt. 54th Regt. (91.)
Forbes, J. A.	Lieut.-Col. late 92nd Highs.	Graham, Andrew, MD.	Fleet-Surgeon (91.)
Fordyce, C. F., CB.	Maj.-Gen. (91.)	Graham, C. S.	Capt. R.A.
Fortescue, H. G.	Capt. late Cold. Gds. (91.)	Graham, Cyril	late Governor Red River Settlements (91.)
Fox, W. V.	Capt. 1st Cheshire Mil. (91.)	Graham, Wm.	Capt. R.N. (91.)
*Frampton, Cyril	Lt. R. M. L. I. (91.)	Grant, A.	Capt. late 61st Regt.
Fraser, Hon. A. W. F.	Capt. Gr. Gds. (91.)	Gray, Bertie J.	Lieut. late Roy. Afr. Corps
Fraser, Thomas	Capt. R.E. (91.)	Gray, C. G.	Lieut.-Col.
Fraser, Sir W. Aug., Bart.	Capt. late 1st Life Gds.	*Grenfell, Hubert H.	Comr. R.N. (91.)
Franklen, Rich.	late Lt. 1st L. Gds.	Grey, Sir George, KCB.	late Capt. 53rd Regt. (31.)
Freeland, H. W.	Dep.-Lt. Sussex (31.)	Grey, H. R. E.	Comr. R.N. (91.)
Freeman, T. A.	Lieut. 70th Regt. (91.)	Griffith, Henry Darby, CB.	Lt.-Gen.
Fremantle, Hon. E. R., CB., CMG.	Capt. R.N. (91.)	Griffith, M. R. M.	Comr. R.N. (91.)
Frith, Cockayne	Capt. late 38th Regt.	Grover, G. E.	Capt. R.E. (91.)
*Fulford, John	Vice-Adm.	Grubb, Alexander	Capt. R.A. (91.)
Fuller, T.	Capt. (ret.) 18th Huss. (91.)	Gunnell, E. H.	Capt. R.N. (101.)
GALBRAITH, W.	Capt. 85th Regt. (91.)	Gunter, Robert	Lt.-Col. 5th West York Militia, late Capt. 4th Dr. Gds.
Gambier, G. C.	Adm.	Gurdon T. P.	Comr. R.N. (91.)
Gardiner, H. L.	Col. R.A.	*HAGGARD, T. T.	Lt.-Col. R.A. (91.)
Gardiner, J.	Capt. late 5th Dr. Gds.	Haig, C. T.	Capt. R.E. (91.)
Garrett, E.	Comr. R.N. (31.)	Hales, Arthur	Capt. 27th Regt. (91.)
Gascoigne, Fred. C. Trench	Hon. Col. 2nd York. Eng. Vols. late Capt. 66th Regt. (31.)	Halifax, Rt. Hon. Cha. VISCOUNT, GCB.	(31.)
*Gassiot, Sebastian	Comr. R.N. (91.)	*Halkett, J. C. Craigie	Lieut.-Colonel
Geddes, A. D.	Major 27th Regt. (91.)	Stirling Mil. (91.)	
Geddes, J. G.	Lieut.-Col.	Hall, G. B.	Lt. late 19th Lt. Dr.
George, F. D., CB.	Major-Gen. (91.)	Hall, Marshall	Capt. late R.E. Middle Mil. (91.)
George, T. Barry	late Lt. 13th L.I. (91.)	Hall, J. P.	Maj. Paym. 94th Regt. (91.)
Gerard, F.	Major Lane. Hus.	Hall, Thos.	Lt.-Col.
Gerard, Sir Robert T., Bart.	Col. Lanc. Huss. ADC to the Queen	Hall, W. H.	Comr. R.N. (91.)

- Hallowell, Edw. Dep.-Lieut. Middlesex
Hallyburton, J. F. G., LORD, GCH. Adm.
Halsey, H. W. R. W. Dy.-Lt. Sussex (91.)
Hamilton, A. P. Admiral (31.)
Hamilton, F. Tower Lieut. R.N. (91.)
Hamilton, Sir C. J. J., Bt., CB. Col. late
S. F. Gds. (31.)
Hamilton, Sir Edw. A., Bart. Capt. (ret.)
Cold. Gds. (91.)
Hamilton, H. G. Capt. R.N. (31.)
Hamilton, Sir J. J., Bart. Lt.-Col.
Hamilton, J. Capt. late Beng. Cav. (91.)
Hammill, Tynte F. Lieut. R.N. (91.)
Hand, G. S., CB. Vice-Adm. (31.)
*Hand, G. Weightman Comr. R.N. (31.)
Hankey, H. A. Gen. Col. 1st Dr. Gds. (31.)
Harcourt, E. W. Col. Cinque Ports
Art. (91.)
Hardinge, Edward Capt. R.N. (91.)
Hardinge, Henry Lieut.-Col.
Hare, H. J. Major 4th W. York Mil.
Harris, J. B. Capt. late 24th Regt.
Harrison, Rev. Oct. Swale, MA. Chaplain
R.N. (31.)
*Harrison, R. Lieut.-Col. R.E. (91.)
Iarman, G. B. Col. (unatt.) (91.)
Harmar, C. D'O. Capt. 39th Regt. (91.)
Harston, C. G. Capt. late R.M.L.I. (91.)
Hart, A. Fitzroy Capt. 31st Regt. (91.)
Hart, Henry G. Maj.-General (91.)
Hart, Horatio H. Lieut. R.E. (91.)
Hart, Reginald C. Lieut. R.E. (91.)
Hart, Wyndham Lieut. Vict. R.V. (91.)
Harvey, Gillmore Capt. R.N.
*Harvey, J. W. F. Comr. R.N. (91.)
Harworth-Booth, B. B. Lieut.-Col.
22nd E. York Art. V. (91.)
Haswell, W. H. Capt. R.N. (91.)
Hawes, A. B. Capt. late Beng. Army
Hawkins, Ethelred Capt. late 22nd Regt.
Hawkins, F. Capt. late 89th Regt.
Hawkins, J. S. Major-Gen. R.E. (31.)
Hay, Edward O. Lieut. R.A. (91.)
Hay, J. Beckford Lewis Adm.
Hay, J. F. Dalrymple Capt. R. Ayre and
Wigtown Mil.
Hay, John Baker Porter Vice-Adm.
Hay, the Right. Hon. Sir John C. D. Bart.,
CB. DCL. FR.S. MP. Vice-Adm. (31.)
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Hayne, C. S. Capt. 2nd S. Devon Mil. (91.)
Heathcote, C. Geo. Lieut. 5th Fus. (91.)
Heathcote, F. A. Lt. 81st Regt. (91.)
Heaton, John R. Lieut.-Col. (91.)
Hemery, E. Col. (ret.) R.E. (91.)
Henderson, G. W. M. Capt. late S. F. Gds. (91.)
Henderson, W. H. Lieut. R.N. (91.)
Henning, Shurlock, CB. Col. 38th Regt. (91.)
Herbert, Hon. A. W. E. M. Lieut. (ret.)
7th Huss. (91.)
Herbert, Ivor J. C. Capt. Gren. Gds. (91.)
Hewitt, Allen J. Lieut. Queen's West.
R.V. (91.)
Hibbert, F. D. Lt.-Col. Bucks Yeo.
late 2nd Drgs.
Hildyard, H. J. T. Capt. 71st Highlds. (91.)
Hilton, Thos. Capt. late 19th Regt.
- *Hincks, A. S. Capt. (ret.) 76th Regt. (91.)
Hobart, Hon. H. M. Major late 103rd Regt.
(91.)
Hodge, Sir E. C., KCB. Lieut.-Gen. Col.
18th Hus. (31.)
Holbrook, E. N. W. Lieut. R.M.L.I. (91.)
Holdich, Sir E. A., KCB. Lieut.-Gen. (91.)
Holdsworth, Walter J. Lieut. Lanark Yeo.
Cavalry (91.)
Holford, R. S. Dep.-Lt. Gloucester (31.)
Holland, J. Y. Col. late R.M.L.I. (91.)
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Hope, J. E. Col. R.A. (91.)
Hope, Sir Jas., GCB. Adm.
Hope, W., CB. Major-Gen. (91.)
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Mil. (91.)
Houstoun, Wallace Vice-Adm.
Howes, H. Capt. late King's O.L.I. Mil.
(91.)
Hubbard, Cecil J. Lt.-Col. Gren. Gds. (91.)
Hulse, Sir Edwd., Bart. Lt.-Col. late S.
Hants Mil.
Humbley, W. Wellington Waterloo Lt.-Col.
late 9th Royal Lancers
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Hume, R., CB. Col. 55th Regt. (91.)
Hussey, W. Hayter Capt. late 26th Regt.
*Hutchinson, A. H. Major R.A. (91.)
Hutchinson, W. B. Paymaster R.N.
Hutton, Edwd. T. H. Lt. 60th Rifles (91.)
- *IMLACH, R. W. Lt.-Col. Georgetown Mil.
(91.)
Ingilby, Sir W. Bates, KCB. Lt.-Gen.
Col. Comdt. R.A.
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shire Highland Mil. (91.)
Irving, Alex., CB. Maj.-Gen. R.A. (31.)
Irving, J. C. S. Capt. 39th Regt. (91.)
Irving, Geo. Clerk Staff Asst. Surg. (91.)
Irving, Lewis Allen Staff Asst. Surg. (91.)
- JACOB, S. S. Capt. Bombay Staff Corps (91.)
Jago, John Lt.-Col. 74th Highrs. (91.)
James, Chas. D. Capt. 36th Regt. (91.)
James, W. Major late 26th Regt.
Janvrin, F. late Ens. 20th Regt.
Jekyll, Herbert Lieut. R.E. (91.)
Jervoise, F. J. E. Dep.-Lt. Hants (31.)
Jocelyn, W. H. Lt. R.N. (91.)
Johnson, Allen B. Col. Ben. S.C. (91.)
Johnson, G. V. Col. R. H. A. (91.)
Johnson, Sir H. F. F., Bart. Col.
Johnson, W. S. Lieut. late 83rd Regt.
Johnston, Currell H. Lieut. R.E. (91.)
Johnstone, J. Julius Lieut.-Col. Gr. Gds.
Jones, Douglas F. Lieut. R.A. (91.)
Jones, H. Helsham Major R.E. (91.)
Jones, Loftus F. Capt. R.N. (91.)
*Jones, Oliver J. Rear-Adm. (91.)
Jones, R. Owen Major R.E. (31.)
Josselyn, Fred. J. Capt. 96th Regt. (91.)
Justice, Philip Capt. 108th Regt. (91.)

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 Kennedy, A. W. M. Clark, FRGS. FLS. Capt.
 late Cold. Gds. (91.)
 Kennedy, J. Douglass Capt. 6th R. Lanc.
 Mil. (91.)
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 Keppel, W. H. A. Lt. Norfolk Mil. Art.
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 Kerr, LORD Walter Talbot Capt. R.N. (91.)
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 King, H. B. Comr. R.N. (91.)
 King, T. H. late H.E.I.C. Serv.
 Knowles, W. Major (ret.) 50th Regt.
- LAMB, Henry late Lieut. I.N. (31.)
 Lambert, Thomas Capt. R.A. (10s.)
 Lansdowne, MARQUIS of (91.)
 Larcum, the Rt. Hon. Sir T. Aiskew, Bart.,
 KCB. Maj.-Gen. R.E.
 Lardner, Wm. Lt. late 2nd W. I. Regt.
 Lardy, Christian F. Lt.-Col. late 53rd Regt.
 Lauderdale, EARL of, GCB. Adm. (31.)
 Law, E. D. Comr. R.N. (91.)
 Lawrence, J. R. Capt. late I.N.
 Lawrence, Sir A. Johnstone, KCB. Lt.-
 Gen. Col. 58th Regt. (91.)
 Lawrence, LORD, GCB. GCSI. (91.)
 Lawson, Robert Insp.-Gen. Hospitals (31.)
 *Layard, C. E. Capt. 15th Regt. (91.)
 Leah, Henry Lt. R.N. (91.)
 Leask, William Major 2nd Hertfordshire
 R.V. (91.)
 Lecky, J. G. Lt.-Col.
 Lee, J. H. late Lieut. S. Hants Mil.
 Leeds, The DUKE of, Major late North
 York Mil. (91.)
 Lees, E. B. Major 31st Lanc. R.V. (91.)
 *Le Mesurier, F. A. Capt. R.E. (31.)
 Lendy, A. F. Capt. R. S. Middx. Mil. (91.)
 Lennox, LORD J. G. Lieut.-Col. late 6th
 Drags.
 Lennox, W. O., G.C. CB. Col. R.E. (91.)
 Lewis, Henry Comr. R.N. (31.)
 Ley, J. M. Col.
 Liddell, Hon. Geo. A. F. Col. (31.)
 *Liddell, W. H. Capt. R.N. (91.)
 Lindsay, W. J. Lt. Rifle Brigade (91.)
 Lindsell, John B. Lieut. R.E. (91.)
 Litteldale, H. W. A. Lt. R.N. (91.)
 Little, R. R. Capt. late Madras Art.
 Littleton, Hon. Algernon C. Lt. R.N. (91.)
 *Lloyd, Edward Lt. 4th Punjab Cav. (91.)
 Lloyd, E. M. Capt. R.E. (91.)
 Lloyd, Mark Capt. (31.)
 Lodder, W. W. Major-Gen. (91.)
 Loftus, Douglas Lieut. late Gr. Gds.
 Logan, Alfred Capt. R.A. (91.)
 Long, Samuel Lt.-Col. late Gr. Gds. (31.)
 Long, Samuel Capt. R.N. (91.)
 *Longstaff, Lewellyn W. Lt.-Col. 1st E.
 York. R.V. (91.)
 Loraine, Sir Lambton, Bart. Capt. R.N. (91.)
 Loraine, W. C. late I.N. (91.)
- Lowndes, James Major Royal Renfrew
 Militia (91.)
 Low, C. R. late Lt. I.N. (91.)
 Loyd, Arthur P. Lieut. 21st Huss. (91.)
 Loyd, Frank K. Lieut. 55th Regt. (91.)
 Loyd, W. K. Lt.-Col. (ret.) R.A. (31.)
 Lucas, H. H. late H.E.I.C.S.
 Lugard, Sir Edw., GCB. Lieut.-Gen. Col.
 31st Regt. (31.)
 Lumsden, Henry Capt. L. Scot. R.V. (91.)
 Lumsden, Sir Harry B., KCSI. CB. Gen.
 (91.)
 Lumsden, P. S., CB. CSI. Col. Ben.
 S. Corps (91.)
 Lyons, T. C. Col. (91.)
 Lysley, W. Gerard Lieut. late Inns of Court
 R.V. (91.)
- *MABERLY, Evan, CB. Maj.-Gen. R.A.
 *Macaulay, G. W. Lt.-Col. (ret.) 1st
 Regt. Scinde Horse (91.)
 McCall, S. Lt. late 5th Dr. Gds.
 McCleverty, James Capt. 45th Regt. (91.)
 McClintock, William Capt. R.A. (91.)
 McDonald, Alex., MD. Surg. (h.p.)
 *McDonnell, Christopher Maj. late 4th R. I.
 Dr. Gds.
 Macdougall, A. H. late Roy. Archers of
 the Queen's Body Guard
 McFarlan, J. W. Capt. and Paymaster
 9th Lancers (91.)
 M'Hardy, J. B. B. Admiral
 M'Hardy, Wallace B. Comr. R.N. (91.)
 *Mackenzie, Colin Capt. late 78th Highlrs. (91.)
 Mackenzie, Keith Stewart, of Seaforth Lt.
 late 90th L. I. (91.)
 Mackenzie, R. S. M. Capt. R.A. (91.)
 Mackeson, E. Dpty.-Lt. Tower Hamlets (91.)
 Mackintosh, G. D. late Hon. Corps of
 Gentlemen-at-Arms
 Mackirdy, D. E. Lieut.-Gen. (91.)
 *Maclean, Hen. John Lieut.-Col. Rif. Brig.
 (31.)
 Maclean, J. L. Capt. late 69th Regt.
 Maclear, J. F. L. P. Capt. R.N. (91.)
 *MacIver, David Capt. late 2nd Somerset
 Mil. (91.)
 McLaughlin, Charles Lieut. R.N. (91.)
 McMahon, Sir Thos. W., Bart., CB. Maj.-
 Gen. (91.)
 McNeile, Alex. Capt. (h.p.) Indian Army (91.)
 McNeill, J. C., G.C. CB. CMG. Col.
 (h.p.) 48th Regt. (91.)
 Mahon, D. Major late 98th Regt.
 Mahon, H. J. Pakenham Lt. late 8th Huss.
 Mainwaring, K. H. A. Capt. R.N. (91.)
 Maitland, E. Major R.A. (91.)
 Maitland, Fred. Thos. Col. late R.S. Corps.
 Malet, Sir A., Bart. Dep. Lt. of Wilts (10s.)
 Maltby, G. R. Lt. R.N. (91.)
 Man, J. Alexander Capt. Roy. Aberdeens
 High. Mil. (91.)
 Manchester, W. D. DUKE of, Lt.-Col. Hunt-
 ingsdonshire Lt. Horse Vols. (11.)
 Mann, Geo. R. Ens. 1st Middx. R.V. (91.)
 Mansel, J. C. Capt. late Northum. Mil.
 Margary, A. R. Major late 54th Regt. (91.)

LIST OF LIFE MEMBERS.

Renfrew	Markham, Edwin	Lieut.-Col. R.A. (9/)
	Marsh, J. C. Lory, MD.	Asst. Surg.-late
	Notts Mil. (9/)	
N. (9/)	Marshall, W.	Dep.-Lieut. Cumb. (9/)
Ass. (9/)	Marshall, Wm. E.	Lt.-Col. 5th Drag. Gds.
Regt. (9/)	(9/)	
A. (3/)	Martin, F. S.	late Ens. 58th Regt. (9/)
E.I.C.S.	Martin, James	Capt. late Rifle Brigade
ten. Col.	Martineau, George	Lt. 6th Surrey R.V. (9/)
	Mason, Geo.	Capt. late 4th Foot
R.V. (9/)	Massie, Watkin	late Lt. Ind. Army (9/)
Gen.	Massy, W. G. Dunham	Col. 5th Rl. Iris
	Lancers (9/)	
Col. Ben.	Matson, Henry	Major late 58th Regt.
	*Mayne, R. C., CB.	Capt. R.N. (9/)
Col. (9/)	Mead, J. A. R.	Lt.-Col. R.A. (9/)
of Court	*Meaden, James	Maj. late Ceylon Rifles
	(9/)	
Gen. R.A.	Mease, Edw.	Capt. H.A.C. (9/)
(ret.) 1st	Meiklam, J.	Lieut. late 9th Lancers
	*Mein, A. Major	late 4th Lanark R.V. (9/)
Dr. Gds.	Mercer, C. H. L.	Lieut. R.A. (9/)
Regt. (9/)	Mercer, Saml.	Rear-Adm.
R.A. (9/)	Merceron, Henry	late H.A.C. (9/)
g. (h.p.)	Mills, Richard	Capt. Civil Service R.V.
4th R. L.	*Milman, G. H. L.	Maj.-Gen. R.A. (3/)
	Milne, Archd. B.	Lieut. R.N. (9/)
Archers of	Molyneux, A.M.	Lt.-Col. late 2nd Mad. L.I.
	Molyneux, A. Mitchell	Capt. late 23rd
Paymaster	R. W. Fus. (3/)	
	*Molyneux, E.	Capt. 7th Dr. Gds. (3/)
Admiral	*Molyneux, W. H. Mitchell	Comr. R.N. (9/)
R.N. (9/)	Monck, Hon. Henry P. C. S.	Lieut
ghlrs. (9/)	Cold. Gds. (9/)	
orth Lt.	Monckton, John H.	Lieut. 2nd Stafford
	Mil. (9/)	
R.A. (9/)	Moncrieffe, Sir T., Bart.	Col. Roy. Perth
plets (9/)	Rifles late Lt. S. F. Gds.	
Corps of	Montagu, Philip	Lt. 31st Regt. (9/)
	Montefiore, Sir Moses, Bart., FR.S.	Capt.
Gen. (9/)	late Surrey Local Mil. and Depty.-Lieut.	
Rif. Brig.	of Kent	
59th Regt.	*Montgomerie, A. W. J.	Maj. 20th Hus. (9/)
R.N. (9/)	Montgomerie, C.T.M.	late Lt. Gr. Gds. (9/)
Somerset	Montgomery, A. J.	Lieut. R.A. (9/)
	Montgomery, R. A.	Lieut. R.A. (9/)
	Montresor, Fred. Byng	Vice-Adm.
R.N. (9/)	Moody, R. Clement	Maj.-Gen. R.E.
B. Maj.	Moody, Thos. B.	Lieut. R.N. (9/)
	Moore, J.	Capt. late 30th Regt.
Army (9/)	Morant, J. L. L.	Capt. R.E. (9/)
Col.	Moreton, Aug. H. M.	Capt. Cold. Gds. (9/)
	Morrah, Jas. A.	Capt. late Adj. 7th Depot
	Batt.	
98th Regt.	Morris, E.	Lieut. late 54th Regt.
8th Huss.	Mortimer, H. M. Jones	Lt.-Col. late
R.N. (9/)	73rd Regt. (9/)	
R.A. (9/)	Morton, James F.	Capt. 55th Regt. (9/)
R.S. Corps	Mosse, W.	Lt.-Col. (h.p.) 26th Cameronians
Vilts (10/)	(9/)	
R.N. (9/)	*Mount, F. J., FRCS.	D.I.G. of Hosp. (9/)
Aberdeen	Mould, John A.	D.I. Genl. of Hosps. and
	Fleets (2/)	
Col. Hunt-	Mould, Thos. Rawlings	Major-Gen. R.E.
(9/)	Mowbray, G. T.	Maj. Leicester Mil. (9/)
R.V. (9/)	Moysse, H. G.	late Lieut. 11th Lt. Drs.
thum. Mil.	Murray, C. Wyndham	Lt. 61st Regt. (9/)
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 Parkinson, C. F. Major-Gen. (31.)
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 Guards (91.)
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 (91.)
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 Vols. (91.)
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 Halifax (91.)
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 (31.)
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